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Canadian Woodlands Section Holds Meeting

First Session of Summer Meeting of Woodlands Section of Canadian Pulp and Paper Association Meets At Duchesnay, Quebec — Question of Education or Experience As Qualifications For Forestry Work Undecided.

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., August 7, 1939—The first session of the summer meeting of the Woodland Section of the Canadian Pulp and Paper Association, held in Duchesnay, Que., was devoted largely to a study of the training of youths for forestry work. The question arose as to which class of youths proved the most acceptable—those of low educational standard with experience of life and work in the woods, or those with a better education with no experience in the woods.

Henri Roy Discusses Qualifications Required

Henri Roy, director of the Quebec Forest Rangers School, said that after many years attention to these two classes of youths he and his staff were still unable to decide definitely as to which was the most promising class. The boys who had more practical experience than school education were generally more easily employed, he said, and the majority had gone through their forestry training with good success. On the other hand, a good many of the younger and newly educated class had become first rate rangers and woodsmen, "although", he added, "it is in this class that we find the greatest number of unambitious students.

Describing the methods of education, he said the student had to put in 1,840 hours of work to complete his course, and the subjects taught were French, mathematics, woods operation accounting, forest mensuration and logging, forest legislation, forest botany and dendrology, ecology and soils, silviculture, forest protection, wood industries and wood technology.

Quebec School Operates Own Sawmill

The school operates its own sawmill for instructional purpose and a wood preparation shop. The students collect tree seeds, extract and clean them, prepare beds in the nursery of the Duchesnay forest research station, collect specimens of forest floor vegetation and bark, specimens of tree diseases and forest insects and study them. They engage in general construction work, stump and rock pulling, ditch digging, concrete work, scaling tests, surveying and levelling.

R. A. Gibson, director of the Lands, Parks and Forest Branch, maintained by the Dominion Government, told of 4,000 men working in various forestry camps throughout the Dominion, and said the training of youths for forestry work by the Dominion, had proven highly satisfactory. The bulk of the work of the national forestry program had been to increase facilities for protecting the forests against the ravages of fire. Roads and trails had to be made, telephone and lookout towers erected, staff buildings provided and fireguards placed in strategic places. Also tourist camps were created where camp fire could be made without danger to the forest.

Young men enrolled for training in this work were provided with complete uniform and outfit, each paying half the cost and the Government the remainder. They were paid $1 a day each and were given free board, lodging and medical attention. No boy could draw more than $10 a months of his pay, the remainder being saved for him until he left for home.

W. R. Brown Tells of C.C.C. Work in U. S. A.

An interesting address on the work of the CCC in the United States was given by W. R. Brown.

Another feature of the meeting was the disclosure of plans for the consolidation of the Canadian forestry industry through conservation of the timber resources. The keynote in this connection was sounded by the Hon. John L. Bourque, Quebec Lands and Forests Minister. To allow depletion of timberlands to continue, he said, would be unwise, not only because of the importance of the forests in the wealth of the nation, but also because of the employment source provided by the industry. At the same time he had something to say about the protection of the workers whose livelihood depended upon the forestry industry. He warned against progress through use of machinery at the expense of lumber workers' jobs. Machinery should help man rather than take his work away from him, he said.

R. A. Gibson Suggests Consolidation

Other suggestions for consolidation through conservation came from R. A. Gibson, director of the Lands, Parks and Forests Branch of the Dominion Mines and Resources Department; Ellwood Wilson, Knowton, Que., consulting forestry engineer; and A. M. Koroleff, the Association's secretary-forester

(Continued on page 18)

TAPPI Announces Fall Technical Program

One of the Most Extensive Technical Programs Ever Offered At a Fall Meeting Awaits Delegates To Fall Convention of the Technical Association of the Pulp and Paper Industry At Syracuse, N. Y., Sept. 12, 13, 14.

The Technical Program for the Fall Convention of the Technical Association of the Pulp and Paper Industry to be held in Syracuse, N. Y., September 12, 13 and 14, indicates an extremely interesting and busy three days for the large number of papermakers who are planning to attend this meeting.

The program, just released by C. E. Libby, committee chairman in charge, is featured by several fine papers from members of the Empire State Section,

C. E. LIBBY
Chairman, Technical Program

sponsors of the meeting for the first time since the section was organized in 1936. The New York State College of Forestry is well represented by a group of papers that present the results of research utilizing the semi-commercial laboratory facilities which became available only last year.

H. M. RICE
Chairman, Registrations

D. C. KNOWLTON
Chairman, Advertising and Exhibits

The Institute of Paper Chemistry and the U. S. Forest Products Laboratory are both well represented by a series of papers covering research projects of great interest to the technical men in the industry. These reports from the educational and government institutions are supplemented by several splendid contributions from the research laboratories of well-known industrial organizations.

The program, subject to further expansion as new features are added, is as follows:

PROGRAM OF TUESDAY, SEPT. 12, 1939

Morning Session, 9:30 A.M. to 12:30 P.M.

SYMPOSIUM ON MANUFACTURE OF MECHANICAL AND CHEMICAL PULPS

1. "Planted Red Pine (Pinus resinosa Ait.) as Re-

W. J. O'BRIEN
Chairman, Publicity and Printing

lated to Pulpwood Yields North and South."—By E. L. McCarthy, N. Y. State College of Forestry.

2. "The Suitability of Red Pine (Pinus resinosa Ait.) for Sulphite Pulp Manufacture."—By John Studeny and C. E. Libby, N. Y. State College of Forestry.

3. "Coefficients of Absorption of Sulphur Dioxide in Water from Air in a Packed Column."—By J. G. L. Caulfield, University of Maine.

4. "Effect of Wood-Stone Contact Area in the Groundwood Process."—By E. R. Schafer and J. C. Pew, U. S. Forest Products Laboratory.

5. "Effect of Rate of Feed of Wood to Stone at Various Stone Surface Speeds in the Groundwood Process."—By E. R. Schafer and J. C. Pew, U. S. Forest Products Laboratory.

Afternoon Session, 2:00 P.M. to 5:00 P.M.

SYMPOSIUM ON CHEMICAL AND PHYSICAL PROPERTIES OF FIBERS

1. "A Method for the Measurement of the Angle of Contact between a Liquid Surface and a Fiber, and the Application of this and Swelling Data to Pore Diameter Measurements."—By J. E. Foote, Institute of Paper Chemistry.

2. "Cross-sectional Dimensions of Fibers in Relation to Papermaking Properties of Loblolly Pine."—By J. C. Pew and R. G. Knechtges, Forest Products Laboratory.

3. "Drainage Characteristics of Paper Making Fibers."—By Cyrus Heigl and W. O. Hisey, N. Y. State College of Forestry.

4. "The Relation between Delignification and Strength Characteristics of Very Raw Pulps."—By H. F. Lewis and C. A. Richardson, Institute of Paper Chemistry.

5. "The Location of Potential Reducing Substances in Woody Tissues."—By S. Coppick and W. Frank Fowler, N. Y. S. College of Forestry.

6. "The Relation of Lignin Content to the Strength of Paper and Boards. I. Literature Survey and Progress Report."—By E. C. Jahn and C. V. Holmberg, N. Y. State College of Forestry.

7. (By Title) "The Effect of Mechanical Gelatinization on the Solubility of Wood, in Cuprammonium Solution".—By John Levy and E. C. Jahn, N. Y. State College of Forestry.

PROGRAM OF WEDNESDAY, SEPT. 13, 1939

Morning Session, 9:30 A.M. to 12:30 P.M.

SYMPOSIUM ON NEW THEORY AND PRACTICE IN LIQUOR PREPARATION AND PULP PURIFICATION

1. "The Manufacture and Uses of Chlorine."—By Paul Keene, Chief Chemist, Solvay Process Co.

2. "An Introduction to the Lime-Chlorine System in the Preparation of Calcium Hypochlorite."—By F. W. O'Neil, N. Y. State College of Forestry and John Rue, Hooker Electro-Chemical Company.

3. "The Development of a Quantitative Technique for the Evaluation of Color Stability of Bleached Pulps and the Influence of Natural Aging and Drying upon this Evaluation."—By J. W. McIntyre, Institute of Paper Chemistry.

4. "Some Observations on the Bleaching of Kraft Pulps."—By W. A. Chilson, Hooker Electrochemical Company.

PROGRAM OF THURSDAY, SEPT. 14, 1939

Morning Session, 9:30 A.M. to 12:30 P.M.

SYMPOSIUM ON THE SIZING AND COATING OF PAPER AND PAPER MILL SANITATION

1. "The Fluorescence Size Test, An Improved Method and a New Instrument for Measuring the Water Resistance of Paper".—By J. A. VanDenAkker, Philip Nolan, Institute of Paper Chemistry, A. C. Dreshfield and H. F. Heller, Hercules Powder Co.

2. "The Effect of Particle Size on the Efficiency of a Rosin Suspension as Measured by the Retention of Rosin and the Degree of Sizing Imparted to Paper."—By Firth Dennett and C. E. Libby, N. Y. State College of Forestry.

3. "Effect of Filler Brightness on Lined Board Brightness."—By W. R. Willets, R. T. Bingham and L. H. Eriksen, Titanium Pigment Corporation.

4. "A Study of Calcium Carbonate, Clay, Casein Coating Mixtures affecting certain sheet characteristics."—By A. E. Hughes and H. F. Roderick, Michigan Alkali Co., Research Laboratories.

5. "Microbiological Control in Paper Manufacture."—By A. E. Griffin, Wallace & Tiernan Company.

6. "The Advantages of Microbiological Control in Pulp and Paper Manufacture."—By J. R. Sanborn, N. Y. State Agricultural Experiment Station.

David M. Shapleigh Joins Delthirna

The American Delthirna Corporation of 250 Park Avenue, New York, announces the appointment of David M. Shapleigh as sales engineer. Mr. Shapleigh is well qualified to assist in the sales and installation of Delthirna Size units. He was graduated from the University of Maine in 1925, receiving the degree of B.S. in chemical engineering, and majoring in pulp and paper chemistry.

Entering the paper industry as a chemist, he gathered valuable laboratory and mill experience for nine years, which covered a wide field. For the past four and one-half years, he has worked entirely on sales and service connected with paper sizing in all its phases, so that he brings to his new position a wealth of competent knowledge. Since graduation he has been connected with the following companies: Cherry River Paper Company, Richwood, W. Va.; Dunn Sulphite Paper Company, Port Huron, Mich.; Amoskeag Manufacturing Company, Manchester, N. H.; Brown Company, Berlin, N. H. and Portland, Maine; American Bewoid Company, New York, N. Y.; Paper Makers Chemical Division of Hercules Powder Company, Albany, N. Y.

Brings Out Dello Mimeo Bond

[FROM OUR REGULAR CORRESPONDENT]

GROVETON, N. H., August 7, 1939—Dello Mimeo Bond is a new mimeograph paper brought out by the Groveton Paper Company, which is adaptable to exceptionally long runs. This sheet is being adopted by many mimeograph users who have run from 5,000 to 10,000 copies.

National Letter Writing Week, Oct.1-7

National Letter Writing Week, sponsored by a group of representative stationery manufacturers, will be observed the week of October 1-7.

Abitibi Rehabilitation Proceeding Slowly

Bondholders' Protective Committee States Deposits Continue To Come In At Accelerated Rate As Earnings of Company Are Less Satisfactory — Low Prices Affect Hinde & Dauch Profits — Other Late Mill News.

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ontario, August 7, 1939—Activity has been curbed for the time being among the various interested groups working toward rehabilitation of the Abitibi Power & Paper Company Limited. Spokesmen for the bondholders' protective committee state that deposits of bonds continue to come in, accelerated, it is said, by reason of less satisfactory monthly reports earning figures reported by G. T. Clarkson, Toronto, who is the receiver and manager. Informal conversations have taken place lately between representatives of the preferred shareholders' committee and members of the Symington bondholders' committee, it is learned. These have not taken place at formally called meetings and reports of what transpired are confined to the news that progress is being made.

It is understood that prominent new interests have entered the negotiations with a view to arrangement of some kind of agreement. Representatives of equity groups are said to be confident of avoiding the final step toward judicial sale of the properties. On the other hand, there has been no indication of any alteration in plans of the major bondholders group which is proceeding with its plans for obtaining as much support as possible for its method of procedure. Attention has again been directed toward the Abitibi situation by recent signs of strength in the preferred shares and bonds. In part this has been shown by the newsprint group as a whole but the Abitibi securities have been somewhat stronger than average.

Low Prices Affect Hinde-Dauch Profits

The degree to which Hinde & Dauch Paper Company of Canada, Limited, Toronto, had been affected by the successive reductions made in the selling price of its products which not only depressed profit possibilities but caused a drop in the volume of orders as a result of uneasiness among buyers, is brought out in a computation of the company's earnings for the first half, made by Financial Counsel from the earnings statement of the parent company which controls 50.798 per cent of the Canadian company's common stock. From these, it is calculated that, for the first six months ended June 30, 1939, net income amounted to $52,284 equivalent to 17 cents per share on the 299,933 shares of common stock, as compared with the net income of $427,445 or $1.42 per share for the full year, 1938, and $546,271 or $1.82 per share for the year, 1937. As a result of the lower trend of earnings in the present year, the dividend rate of $1 annually which was paid in 1937 and 1938, was cut to twelve and a half cents quarterly with the April 1, 1939, payment but even this lower rate of payment has not been covered by earnings in the current half year. Following three decreases in selling price in 1938 of which two came in the last quarter of the year, a further decrease went into effect and there was a holdback in purchasing, and estimated net income dropped to $8,652 or three cents per share for the three months. In the second quarter, the company suffered a further decrease in selling prices of shipping cases of ten per cent and, on the company's principal board production, another one of three per cent, but profits were somewhat better than in the first three months now being estimated at $43,632 or 14 cents per share. Officials believe that the bottom of the decline has been reached. The situation has been alleviated, however, by improvements to the plant during the last three years.

A. D. Cobban Predicts Better Business

A. D. Cobban, of Toronto, vice president of the Great Lakes Paper Company, Fort William, Ont., spent a few days recently at the mill. He said that there was already a noticeable upswing from the doldrums of 1938 and production would soon be humming along nicely. The industry, which normally employed hundreds of men in Fort William and Port Arthur, had been suffering from a slump caused in the main by huge purchases of newsprint in Canada and the United States in 1937, and by competition from Scandinavian countries. Consumers knowing in advance that the price of newsprint would go up, contracted to buy their normal month to month requirements before the end of the year to take advantage of the lower figure. Huge stocks were laid in, enough in some instances to do for all of last year. Stagnation in the industry followed and its effect was felt in every plant in Canada. Mr. Cobban said that heretofore the business of making newsprint had been regarded by economists as a true barometer of conditions, but this was not the case last year, on account of the abnormal purchases of the year before. Most of the surpluses, especially in the United States, had now been used up and prospective purchasers are in the market again. Consequently, the industry at the head of the Great Lakes and elsewhere in Canada could look forward with confidence to better business and considerable more employment for the workers.

J. A. Northey on Railroad Board

James A. Northey, of Toronto, president of the Telfer Paper Box Company, Limited, and of the Northey Printing Comapny, has been appointed a member of the Board of Canadian National Railways by the federal government succeeding James Y. Murdoch.

Master Weight Tables

The Babcock & Wilcox Tube Company, Beaver Falls, Pa., announces the availability of Technical Bulletin 15, Master Weight Tables for Round Seamless Steel Tubing. The tables give weights per foot for minimum wall and average wall tubes, hot-finished and cold-drawn, ranging in size from 1/16 inch O.D. with 36 B.W.G. wall to 10¾ inches O.D. and 1⅝ inch wall thickness inclusive.

The publication is 8½ x 11 inches in size, with large figures in the tables for ease in picking out weights. Copies may be had by applying on company letterhead or by otherwise indicating company connection.

New Box Concern Purchases Plant in Chicago

Abell Box Corp. Buys Old 12-Acre National Radiator Plant and Will Remodel It To Manufacture Corrugated Fiber Containers — Midwest Paper Market Improves—Paper Milk Container Fight Continues Active.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., August 7, 1939—G. A. Bell, president of the National Bank of Marion, Indiana, this week bought the old National Radiator Plant, vacant for the last nine years. The plant occupies a 12 acre site at 1111 E. 83rd Street. It will be occupied by a newly formed Indiana concern known as the Abell Box Corporation as soon as alterations costing approximately $50,000 are completed. These will require about 90 days, it was said. The new plant, which will employ 250 persons, will manufacture corrugated fiber containers. It is understood that the Indiana Fiber Products Company, also controlled by Bell, and which has a small plant at 6550 La Vergne Avenue in the Clearing industrial district, will be merged with the new concern.

Midwest Market Reflects Improvement

The Chicago paper market shows signs of material improvement as demand is reported as better in virtually all grades of paper. The kraft market, in particular, is experiencing an improvement in both the quantity and volume of orders though local offices report a continued depression in the price structure discouraging to those who feel the need of eliminating profitless prosperity with the more genuine variety. Waste papers were much more steady in tone during the past week. Supplies were no longer reported as piling up and improved demand was rapidly imparting strength to most of the grades, particularly the higher priced group. Sulphite bonds were in fair demand with the undertone firm. Groundwoods reported some spottiness but most offices visited indicated a degree of optimism due to the type of orders being received. Newsprint markets revealed little change though a pronounced improvement in business sentiment was having some effect in increasing volume. Book and cover papers showed a better reaction to fall merchandising plans with the former moving into much firmer ground according to Chicago merchants.

Paper Milk Container Fight Continues

At least two dairies in Chicago would market milk in paper containers if it were legally possible to do so according to announcements made in Chicago this week. Both announcements were made in conjunction with information concerning the suit to compel the city to permit use of paper containers which is now pending in the federal court.

The Borden Company and Fieldcrest Dairies were the two who filed application to use the paper containers. Fieldcrest opened the court fight after permission to use the paper variety of milk bottle had been denied.

All three companies now sell milk in both glass and paper containers in Chicago's suburbs. Approximately 75 per cent of the milk sold in the suburbs by Borden is in paper containers as compared to about 40 per cent sold by the Bowman organization. Fieldcrest uses paper containers exclusively in suburban areas. Bowman officials said this week that it cost between eight and nine mills more to market paper packed milk than that in glass while Borden recited a similar estimate. However, Fieldcrest has expressed the belief that paper containers actually were less expensive because larger loads could be handled and there would be no washing cost. Borden officials, added however, that the present practice of selling milk in paper and glass containers at the same price could not continue. They pointed out that in New York and other large cities, where paper containers are legal, the price per quart is one cent more than for milk in paper containers and added that if the cost of the paper containers could be lowered it would be possible to continue to sell at the same price as milk in glass containers. The Borden Company stated that the volume of business in paper contained milk was about 5 per cent less than it was shortly after the new package was introduced last November.

Chicago Planning for Fall NPTA Exhibit

Chicago members of the National Paper Trade Association and its many affiliated organizations are beginning now to make extensive preparations for the Fall meeting of the N.P.T.A. to be held at the Hotel Stevens in Chicago on September 18-to-20, inclusive. According to word received here, A. H. Chamberlain, secretary of the Association, has advised members of the continuation of the popular "controlled" exhibit program with reserved floors of the Stevens again to be utilized for a series of exhibits. C. H. Roach of the Capital City Paper Company of Springfield, Illinois, is a member of the exhibit committee which is reported to be making special plans for displays excelling those of past years both in quality and quantity. Meanwhile, the midwest division of the Salesmens Association of the Paper Industry is concentrating on the annual golf outing at the Olympia Fields Country Club to be held in conjunction with the Fall meeting. The outing has come to be known as a fitting climax to the business sessions and annually attracts a widespread attendance from all parts of the country. Members of the industry interested in the exhibits and the general program of the N.P.T.A. are being urged to communicate with Mr. Chamberlain at the New York offices.

Stanley To Address Trade Executives

Henry W. Stanley of the National Paper Trade Association is to be a guest instructor at the annual National Institute for Commercial and Trade Organization Executives to be held at Evanston, Illinois, August 13 to 19 inclusive. Mr. Stanley will give a course of instruction during the entire week on the subject of "Retail Trade Promotion". The school itself annually attracts trade and commercial organization leaders from all parts of the country and the selection of Mr. Stanley as an instructor is considered a genuine compliment to the work of the N.P.T.A. along trade promotion lines.

Paper Men Interested in Pending Bills

Reorganization of Public Service Commission and Wolf River Reservoir Project Interest Paper Companies—Congressman Murray Questions Government Competition—Alsted Estate Taxed $97,309.33 By State.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., August 7, 1939—Wisconsin legislative matters continue to occupy the interest of paper manufacturers because of the bills now pending. One of these deals with a reorganization of the present three-man Wisconsin Public Service Commission and making it a one-man body. The bill proposes to place the responsibility in a director, and to organize a three-man administrative board of review to hear appeals from the commissioner's decision.

Since the commission deals with regulation of intra-state freight rates, J. R. Hafstrom of the Marathon Paper Mills Company, Menasha, Wis., appeared before the judiciary committee of the Wisconsin Assembly in opposition to the bill. He said the bill would not result in economy but would cost the state more money. "A one-man director," he said, "would have the greatest difficulty in making unbiased decisions in the many hairline cases before the commission." It would be further impossible, he pointed out, to adjudicate the multitude of cases which come before the commission, cases which now require the full time of three members. Other opponents of the bill were mostly labor unions.

Assembly Favors Reservoir Bill

An encouraging situation exists relative to passage of another bill which grants a charter to the Wolf River Reservoir Company to erect a storage at Lily, Wis. with the hope of eliminating lack of water power during drought periods among Fox River Valley paper mills. The committee on state affairs of the Wisconsin Assembly has recommended passage of the bill, and it will be up for action soon. The measure has already passed the Senate. The committee vote was seven to four. Harry Brooks of Antigo, secretary of the Reservoir company, says the floorleader in the Assembly, R. W. Peterson, will lead the move to support the bill.

Kimberly-Clark Golfers Twin Prizes

Twenty golfers out of sixty who participated were awarded prizes at the recent eleventh annual golf jamboree of Kimberly-Clark Corporation, Neenah, Wis., at Ridgeway Golf Club. Herbert Stinke won low gross with a score of 77, while Charles Lemmon, who scored 145, won high gross. John Hilton took first in the blind bogey, while Walter Roehr and Leonard Meyer were tied. Pairings were made for the annual golf tournament, which was to be completed in four flights.

Congressman Questions Government Competition

Congressman Reid F. Murray of Waupaca, Wis., was quoted in the Congressional Record last week on the matter of government-encouraged competition with Wisconsin paper mills. In response to pleas from paper mill labor unions, he has questioned the "Advisability, desirability, or fairness of having federal funds used to start new paper plants in competition with paper mills already in existence." He referred to a three and a half million dollar Reconstruction Finance Corporation loan used to establish a southern paper mill.

At the same time, Congressman Murray pointed out that "There is a great opportunity for domestic production" of paper, shown in the fact that last year over $101,000,000 worth of newsprint was imported, duty free.

1000 Attend Gilbert Co.'s Picnic

More than 1,000 attended the annual family picnic of Gilbert Paper Company, Menasha, Wis., at Smith Park at Menasha Saturday afternoon and evening, July 29. An amateur show of twelve acts was one of the features and there were ball games and various other amusements. Checks in a safety contest for the first six months of 1939 were awarded. The Valiant team captained by Roman Marx and the Dispatch team captained by Irvin Schuelke tied for first place. Numerous prizes also were distributed in the picnic contests.

The annual picnic of the Central Paper Company, Menasha, Wis., was also held on July at Strobe's Island, near Appleton, Wis. All-day entertainment was provided the employees and their families.

Alsted Estate Taxed $97,309.33

A state tax of $97,309.33 has been set on the $1,035,392.57 estate of the late Lewis L. Alsted, president of the Combined Locks Paper Company, Appleton, Wis. Under the terms of the will, the widow will receive $490,805.72 and the daughter, Mary, $529,288.66. The estate consisted of $30,000 in real estate and $1,005,392.23 in personal property.

Rhode-Landwehr Nuptials

John Rhode, chemist for the Marathon Paper Mills Company at the carton division at Menasha, Wis., and Miss Lorraine Landwehr, Seymour, Wis., were married July 29 at St. Sebastian Church at Isaar, Wis. They will reside at 814 Tayco St., Menasha.

South African Mill Starts

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., August 7, 1939—An important new industry was established in the Union of South Africa with the opening of the South African Pulp and Paper Industries mill at Geduld, about 28 miles from Johannesburg. The new plant, which has a productive capacity of 14,000 tons per year will start production at the rate of around 4,000 tons per month. Printing papers (with the exception of newsprint), writings, cream wool and laid papers, wrappings (including imitation parchment), and strawboards will be produced at the new mill, which will employ the Pomilio process, utilizing local straw and grasses.

Financial News of Pulp and Paper Industry

Union Bag Earns $78,875—Consolidated Nets $574,958 For Six Months—Nashua Gummed Paper Earns 77 Cents Per Share — Fort Wayne Acquires Brack Container Stock—Puget Sound Loses $14,821—Other News.

New York Stock Exchange

High, Low and Last for the Week Ending August 9, 1939

	High	Low	Last
Armstrong Cork Co.	42⅜	39⅜	39⅜
Celotex Corp.	12¼	10¾	10¾
Celotex Corp., pf.	66	66	66
Certain-Teed Products Corp.	7⅜	7	7
Certain-Teed Products Corp., pf.	30⅛	27¼	27¼
Champion Paper & Fibre Co.	20¼	18¾	18¾
Champion Paper & Fibre Co., pf.	99	99	99
Congoleum-Nairn Co.	26⅜	25½	25¾
Container Corp. of America	11⅜	10⅜	10¾
Continental-Diamond Fibre Co.	7	6¾	6¾
Crown-Zellerbach Co.	10½	10	10
Crown-Zellerbach Co., pf.	81	79¾	79¾
Flintkote Co.	21⅞	19	19
Robert Gair	2¾	2⅜	2⅜
Robert Gair, pf.	8⅞	8	8
International Paper & Power	10⅛	9	9⅛
International Paper & Power, pf.	37½	33	33¼
Johns-Manville Corp.	76¾	71	71
Johns-Manville Corp., pf.	130	127½	127½
Kimberly Clark Corp.	28	27½	27½
MacAndrews & Forbes	34½	34	34
MacAndrews & Forbes, pf.	132½	132½	132½
Masonite Corp.	43½	42	42½
Mead Corp.	8	7¾	8
Mead Corp., pf.	57	57	57
Paraffine Companies, Inc.	45	45	45
Ruberoid Co.	22⅜	19½	19⅝
Scott Paper Co.	52	51⅝	52
Scott Paper Co., pf.	114	114	114
Sutherland Paper Co.	25½	25	25
Union Bag & Paper Corp.	8¼	7⅛	7¼
United Paperboard Co.	4⅞	4½	4½
U. S. Gypsum Co.	89	82	82¾
U. S. Gypsum Co., pf.	175¾	175	175

New York Curb Exchange

High, Low and Last for the Week Ending August 9, 1939

	High	Low	Last
American Box Board Co.	6¼	6⅛	6⅛
Brown Co., pf.	10¼	10⅛	10¼
Great Northern Paper	39	38½	39
St. Regis Paper Co.	2½	2	2⅛
St. Regis Paper Co., pf.	44½	43	44½
Taggart Corp.	3½	3½	3½

Union Bag Earns $78,875

Despite a combination of lower prices and reduced buying, Union Bag and Paper Corporation in the second quarter this year earned net profit of $78,875, or six cents a share on the 1,262,729 shares of capital stock outstanding, according to an interim statement issued today by Alexander Calder, president. This was after all charges, including provision for Federal income and capital stock taxes, and compared with net of $153,490, or 12 cents a share on the same number of shares, for the first quarter this year, and with $206,986 for the quarter ended June 30, 1938, equal to 16 cents per share on the same number of shares.

For the 12 months ended June 30, 1939, net profits totaled $575,020 or 46 cents a share of capital stock now outstanding, compared with $703,131, or 56 cents per share, for the 12 months ended March 31, this year, and with $1,375,901 for the 12 months ended June 30, 1938, or $1.09 per share on the same number of shares.

"Profits for the first half of 1939 have been low as a result of smaller volume and lower prices," Mr. Calder said. "However, July volume together with our current unfilled order position indicates better operations for the last half of this year."

Sales for the three months ended June 30, this year, totaled $3,673,872 to compare with slightly higher sales of $3,805,052 for the previous quarter ended March 31, 1939. For the 12 months ended June 30, 1939, sales amounted to $16,023,068 as compared with $16,414,074 for the 12 months ended March 31, this year.

Consolidated Nets $574,958

[FROM OUR REGULAR CORRESPONDENT]

WISCONSIN RAPIDS, Wis., August 7, 1939—A report showing net income of $574,958 for the first six months of 1939, an increase of more than 100 per cent over the net earnings for the same 1938 period, was submitted to stockholders of the Consolidated Water Power and Paper Company by George W. Mead, president, at the firm's annual meeting July 26.

The semi-annual report showed a more prosperous operation of Consolidated plants during the period ending June 30 than during either 1937 or 1938. The net income for the same period in 1938 was less than half, or $278,129. Net income for the period between January 1 and June 30, 1937, was $391,313.56.

Sales showed a sharp increase, Mr. Mead reported, and now have reached regular monthly totals that are the greatest in the history of the corporation.

Officers were elected as follows: President, George W. Mead; vice president, treasurer and director of manufacturing, Stanton W. Mead; vice-president and director of sales, Walter L. Mead; secretary, E. B. Redford. The officers and T. W. Brazeau form the board of directors.

Nashua Paper Nets 77 cents per Share

The Nashua Gummed and Coated Paper Company reports consolidated net profit of $65,200 for the first half of 1939, after provision for income taxes and minority interest. After deducting preferred dividends and premium on preferred stock retired, balance of $35,794 amounted to 77 cents a share. For the same period last year, a deficit was reported. For the full year 1938, earnings were equal to $3.63 a share on the common.

During the first six months of this year the company retired about half the first preferred stock of $100 par value outstanding at the close of last year. The total outstanding on June 30, 1939 was 1983 shares compared with 3902 on December 31, 1938.

Directors have declared a dividend of 50 cents a share on the common payable August 15 to stock of record August 8.

Brack Container Sold

All capital stock of the Brack Container Corporation, Rochester, N. Y., has been acquired by the Fort Wayne Corrugated Paper Company. H. M. Treen, vice president and general manager of the Fort Wayne, Ind., concern announced that the Rochester plant would continue manufacturing corrugated shipping containers. It employs fifty persons.

Retirement of Allan L. Brack as president of the Brack Corporation, a post he has held since its organization in 1926, was also announced, George A. Copeland and C. A. Sharp, also incorporators and officers of the company, will remain in the organization.

Puget Sound Loses $14,821

The Puget Sound Pulp and Timber Company and subsidiaries for six months to June 30 report a net loss of $14,821, against $53,997, loss last year. June quarter: net profit, $12,615, equal to 10 cents each on 123,637 shares of $20 par, 6 per cent cumulative preferred stock.

Eddy Paper Reports $62,851

The Eddy Paper Corporation report as follows for the six months to June 30: Net profit, $62,851, equal to 34 cents each on 185,048 shares of common stock, compared with a net profit of $69,345, or 39 cents each on 178,000 shares of common stock, in the corresponding six months of 1938.

Philip Carey Reports Net of $103,759

The Philip Carey Manufacturing Company reported today a net profit of $103,759 for the second quarter of 1939, compared with net loss of $80,747 for the corresponding period of last year. Net profit for the twelve months ended on June 30 was $175,818, in contrast to a net loss of $193,254 for a year before.

Leaves Detroit Paper Products Co.

KALAMAZOO, Mich., August 1, 1939—Walter B. Hadley of the Sutherland Paper Company has tendered his resignation as a member of the board of directors of the Detroit Paper Products Corporation. His resignation is to be effective immediately.

Dennison Puts Earnings at $88,000

The Dennison Manufacturing Company reports for the six months ended June 30, estimated net profit of $88,000, compared with an adjusted net loss of $66,000 in the first half of 1938.

U. S. Envelope Nets $153,894

The United States Envelope Company report as follows for the six months to June 30: Net profit, before Federal taxes, $153,894, contrasted with a net loss of $156,855 for the same period in 1938.

American Box Board Nets $47,207

The American Box Board Company for the twenty-four weeks ended May 13, reports net profit, $47,207, or 8 cents a common share.

Sonoco Products Reports $377,349

The Sonoco Products Company for the six months ended June 30 report net profit of $377,349, or $1.53 a share.

Merchant Opens Large Exhibit

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., August 7, 1939—A new and novel innovation has been introduced by Wilcox-Walter-Furlong Paper Company, with the arrangement of a large and attractive exhibit of printing open for inspection of printers, advertising men and women and others who may be interested. On the spacious second floor of the company's office building there is an array containing hundreds of specimens of single color, halftone process, multi-color work, letter press, offset and gravure. Commodious tables with spacious large drawers, and attractive wall panels have been built exclusively for the display; printed samples of paper of innumerable variety are contained in these drawers, and fluorescent daylight lamps illuminate the principal wall panels to show the color specimens to the greatest advantage, each panel depicting a complete display of fine printing on the paper stock individualizing the paper stock of each particular mill represented by the following; Martin Cantine coated paper; W. C. Hamilton & Son's uncoated papers; District of Columbia Paper Company's cover stock, and Tilleston & Hollingsworth Company's covers and text papers.

Book Paper Hearings

At the hearing held at San Francisco, Cal., on July 27, C. F. Diggs, examiner for the Federal Trade Commission, heard testimony in regard to the charge of the commission that the Book Paper Manufacturers' Association has allegedly engaged in activities which were in restrain of trade. Testimony was heard to the effect that the Schmidt Lithograph Company, manufacturers of fruit and other labels, did not manufacture or deal in paper but coated paper to obtain uniformity for the production of their labels.

At the hearing held in St. Louis, Mo., on August 2, William M. Gruber, a clerk for the Graham Paper Company, 1014 Spruce Street, was the only witness called. Most of his testimony dealt with identification of correspondence with the Michigan Paper Company of Plainview, Mich., one of the companies charged by the commission, which indicated the Michigan concern could not quote prices between August 1 and October 18, 1937, because no prices had been fixed by the association.

Further hearings are scheduled for an unannounced date in October.

CANADIAN WOODLANDS SECTION MEETS

(Continued from page 11)

Mr. Gibson, in a paper read by T. A. McElhanney, of the Dominion Forest Products Laboratory, suggested development of a "Canadian technique" of forestry operation. The possibility of a survey of forestry research facilities throughout Canada in the aim of conservation, as well as of research work now in progress, was mentioned by Mr. Koroleff. He had been informed, he said, that the question was to be investigated at the next meeting of the Associate Committee on forestry of the National Research Council.

Also heard at the meeting was a report by Dr. I. H. Crowell, of Macdonald College, Ste. Anne de Bellevue, on research into "blue satin fungi."

Nearly 200 of the Dominion's leading forestry experts attended the meeting.

Carton Association Holds Outing

PAWTUCKET, R. I., August 7, 1939—One of the most enjoyable affairs ever held by the Carton Association of Rhode Island was the sixth annual outing at the Wannamoisett Country Club here, Monday, July 31. Among the guests present were William Kreeger, executive secretary of the National Association of Paper Box Manufacturers; Harry Roden, publicity manager of the National Association, and A. C. Wiswall, president of the New England Paper Box Manufacturers Association. A few of the more prominent supply men were present.

Clear skies favored the party most of the afternoon, although a refreshing shower came up about four o'clock, sending some of the golfers scurrying to the club house, a portion of whom were drenched, while others braved it out, continuing to play or trying to get shelter on the links. About 30 of the approximately 50 per cent played golf for sweepstakes prizes, while others did some putting on the green and still more played croquet. There was a general social session at the club house before and after the dinner.

A sumptuous dinner was served, after which President Charles J. Shaw presented those at the head table, who included, besides the guests mentioned, Harold Fuller, former president of the National Association, Thomas Casey Greene, executive secretary of the Carton Association, Howard Scholes and Ed Basler.

Mr. Wiswall mentioned tentative plans for a meeting of the New England Association in October, undoubtedly in New Haven. He hoped that many would attend.

Mr. Fuller spoke briefly. Mr. Kreeger made a few remarks, noting that he had had a "swell" time.

Each of the others introduced himself.

President Shaw turned the meeting over to Mr. Greene, who announced the winners, as follows: Charles K. Shaw, Jr., won the low gross prize, with a score of 81, which brought $15, with Howard S. Scholes having his ticket.

Mr. Scholes won the low net, with 68, with Barney Barlow having the lucky ticket, good for $10.

In the second division, Philip Green, of Green Bros., made the high score of 136, with a handicap of 30, with the resulting score 106, and Ed Basler, of the International Braid Co., holding the ticket, worth $5.

It was announced that Bill Kreeger shot a deuce at the 8th hole.

The committee of arrangements was composed of Charles K. Shaw, Howard S. Scholes and Thomas Casey Greene.

Government Paper Bid

WASHINGTON, D. C., August 9, 1939—The Government Printing Office has received the following bids for 240,000 pounds of 25 x 38 M. F. book paper; Mudge Paper Company, 4.134 cents; Perkins-Goodwin Company, 4.085 cents; Cauthorne Paper Company, 4.08 cents; Whitaker Paper Company, 4.11 cents; Fitchburg Paper Company, 4.05 cents; Stanford Paper Company, 4.52 cents; Frank Parsons Paper Company, 4.225 cents; Barton, Duer & Koch Paper Company, 4.134 cents; Marquette Paper Company, 4.32 cents; Graham Paper Company, 4.32 cents; and R. P. Andrews Paper Company, 4.02 cents.

B. C. Paper for South Africa

[FROM OUR REGULAR CORRESPONDENT]

VANCOUVER, B. C., August 5, 1939—South Africa is one of the comparatively new markets for Canadian paper products that may become an important outlet for mills operating in British Columbia, according to Harry C. Pim, sales manager of Pacific Mills, Ltd., Vancouver and Ocean Falls, B. C., who has returned from an eight months' tour of the Orient, Australasia, Africa and the British Isles.

"South Africans are really interested in the products of B. C., and with a dependable direct shipping service now available they should be a significant factor in future export sales," Mr. Pim said.

Pacific Mills is now shipping kraft paper to the Cape and expects to sell fruit wrap there in considerable volume, just as it has done already in Australia.

"With the Orient virtually closed to paper and paper specialties because of war conditions, it was necessary to look to other parts of the world for markets", said Mr. Pim, explaining the primary reason for his tour. Japan is now buying pulp, presumably for rayon manufacture, but is buying no newsprint, and China's purchases have been negligible owing to blockades and other difficulties. Normally the Far East is one of the biggest markets for Pacific Coast pulp and paper.

The Australian market for paper products is very active, Mr. Pim reported, and stated that good business was being done there. New Zealand's recently imposed import restrictions have curbed sales in that territory, and Mr. Pim fears that the kraft sales there this year from B. C. will be only about 25 per cent of last year's quota. Once New Zealand has overcome her present credit difficulties, however, the dominion should be back in the market, he stated.

Several South American countries, notably Ecuador, Columbia and Peru, are now buying B. C. made kraft and other papers.

"World markets these days are a difficult thing to estimate," concluded Mr. Pim. "Political and economic events happen so swiftly that a long range estimate is almost impossible. More and more we must realize in Canada that the British markets are the dependable ones, and we should not miss any opportunities to hold and strengthen them."

Summer Fun Fest at Kalamazoo

KALAMAZOO, Mich., August 7, 1939—The Michigan Division of The Superintendents Association held their annual summer fun fest at the Kalamazoo Country Club on Tuesday, July 25, 1939. Showers during the afternoon interfered with the Golf tournament, although a number of the players finished in spite of a drenching. An issue of "fiat" currency appropriated by the U. S. Rubber Company provided the medium of wages on the tournament and the other competitive activities engaged in. However prizes in real cost were awarded to seven members who finished with the largest share of the "phoney" winnings. James Verdon, Barney Benson, W. D. Sanders, Harry Bradford, Ray Barton, L. H. Breyfogle all of Kalamazoo and Arthur Coffin of East Orange, N. J., were the lucky participants. A steak dinner and program was held in the evening. Frank B. Eilers was the general chairman on arrangements.

Indianapolis Demand Improves

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., August 7, 1939—The local paper business seems to be recovering from what might be termed a mid-summer lull. The situation here is far from pessimistic and volume generally speaking, is considerably ahead of last year. The outlook for late summer, particularly in the fine paper field is very good, according to local jobbers. Sulphite papers and books and covers all have moved very nicely during the last week or so and inquiries lead to the belief that they will continue making progress into the fall season. The price situation is well in hand and there are no disturbing factors in sight.

Demand for summer specialties continues very fine. This year will show a sizable increase over the volume done a year ago. Dealers generally have low stocks, but they are being kept well balanced and the dealers are in the market for small orders each week. Tissues also have moved well during the last week and here, also, the volume is showing a good increase over last year.

While newsprint demand is not all that could be desired, there has been a slight improvement during the last fortnight. The increase has been gradual and it is believed it will continue now into the fall season.

No change has been seen in kraft and common papers. The volume is slightly ahead of last year, but further improvement is wanted. Prices are rather weak and some chisseling has been noted, but the practice has not become common. Paper bags including those for laundry and dry cleaning plants, are moving about the same as a year ago.

A slight decrease has been noted in demand for building papers, but this is attributed to extremely hot weather rather than basic conditions. It is believed that as fall approaches there will be a decided improvement in demand. Container factories are operating nearly normal and demand for the entire summer has been above that a year ago. The milk and ice cream trade and brewery trade has been very good during the last week.

Paper stock men report a better condition in the price level in some grades of waste paper. Otherwise there has been no change.

Must Bargain with Brotherhood

WASHINGTON, D. C., August 9, 1939—The National Labor Relations Board has ordered Fort Wayne Corrugated Paper Company, at its plant in Hartford City, Ind., to bargain collectively with Local No. 182, International Brotherhood of Pulp, Sulphite and Paper Mill Workers, affiliated with the American Federation of Labor, and to reinstate with back pay Cyril K. Wentz to his position as an operator of the "double backer" or a substantially equivalent position. The company was also ordered to cease interfering with its employees in their rights to self-organization and collective bargaining and to stop engaging in espionage activities.

The board dismissed a charge that the company had laid off Eldo Rogers because of his union activities, after finding that Rogers' lay off was in the order of seniority in all respects except that the company gave employment to another employee who had less seniority than Rogers for a few days. However, the board found that the company was not informed of its infraction of the seniority rules in this respect.

File Objections in Dexter Suit

[FROM OUR REGULAR CORRESPONDENT]

DEXTER, N. Y., August 7, 1939—The widows of the late Dr. Clarence W. Campbell and Dr. James Campbell, officials of the Dexter Sulphite, Pulp and Paper Company, have filed objection in Surrogate's Court to petitions for final accountings in their husbands' estates, the latest development in the legal fight for control of the paper concern. The objections filed this week were set down for hearing on September 13 by Surrogate Fred A. Grant. The objections also charge that certain securities were improperly and wrongfully purchased by corporations and persons bearing a fiduciary relationship to the estate. Objection was also made to sale of 200 shares of Northern New York Trust Company stock in the estate, allegedly held as collateral, on the grounds that the estate was entitled to the stock because of improperly held sale. General objections to claims were also filed.

Rejection of claims totaling $70,191.50 against the estates of the late Drs. Clarence W. Campbell and James E. Campbell may add another chapter to the series of legal movements which have shrouded the affairs of the family and the Dexter Sulphite Pulp and Paper Company. These interests have been rejected by the executors and administrators of the two estates. The claims consist of $49,492.49 in promissory notes and other claims for $20,540.12. Besides one note for $3,000 there are 17 notes for $2,000, one for each year from 1914 through 1930, and six notes for interest on the other notes from 1925 through 1930. The notes to cover interest total $12,492.49. It is said that the father of the two Campbells, the late Charles E. Campbell, directed in a legally binding manner that $2,000 annually should be paid their mother. Instead of demanding cash the mother took notes.

Holyoke District Accepts New Terms

HOLYOKE, August 7, 1939—Members of the three unions of paper mill workers of this section this evening voted to accept the terms of the new working agreement preferred by the mill owners and the negotiating committee of their union, exceptions being taken to several minor matters which will be adjusted within a few days. The chief feature of the new contract is the increase of rates amounting to approximately 5 per cent arrived at principally by paying for 44 hours of work although the actual work-week is established at 42 hours.

Another important feature of the new contract is that the new rate shall go into effect on October 23d when all new minimums established by the Federal Wages and Hours bill shall go into effect. The new contract is to be a minimum for the industry hereabouts.

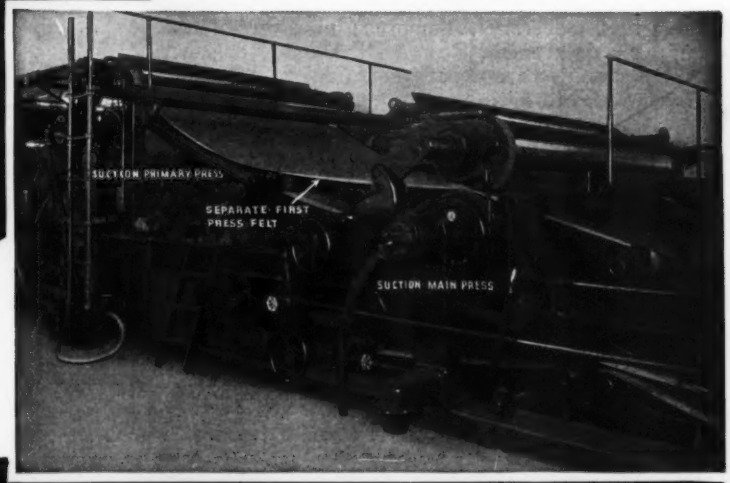
The preferential shop agreement continues in effect and the contract is to endure for one year. It represents three months of negotiations and from the workers' point of view has been successful. Of the 2000 workers involved in the new agreement, about 800 are papermakers and the remainder are in the finishing departments. Wage rates among the papermakers vary from 56½ cents per hour to $1.04 per hour.

Representing the mill owners was Harold Martin who takes the place of the late Adam Wilkinson, for many years negotiator for the owners of this section.

Suctionize

YOUR BOARD MACHINE WITH Beloit SUCTION

DRUM PRESS *
PRIMARY PRESS
MAIN PRESS



Note the short top felt for suction drum press nip. All plain primaries have been removed.

Wet pickup felt returns after suction primary press. Suction first press is on separate felt.

1. Removes large quantity water without disturbing formation or finish.
2. Reduces crushing and checking.
3. Improves finish. Reduces felt marks.
4. Permits use of light weight short top felt. Lower felt cost.
5. Eliminates several nips. Improves test of board.
6. Permits more bulk if desired.
7. Increases test or permits cheaper furnish and maintain same test.
8. Suction main press more efficient on separate felt.

* Suction drum press is equivalent to suction drum and suction primary press.

BELOIT IRON WORKS PAPER MACH'Y BELOIT WIS

THE BELOIT WAY IS THE MODERN WAY

BELOIT IRON WORKS, BELOIT, WIS.

White & Wyckoff Mfg. Co. 50 Years Old

HOLYOKE, August 7, 1939—The fiftieth anniversary of the founding of the White & Wyckoff Manufacturing Company, was marked this past week with fitting public tribute to the various officials instrumental in the founding and development of the local company.

The firm first came into being as The Smith & White Manufacturing company, August 1, 1889. At that time, the machinery consisted of four ruling machines, one power trimming knife, a hand cutter and various other small devices. Today the concern owns and occupies a large six-story factory with about 171,000 square feet of floor space.

In 1891, J. L. Wyckoff joined the organization and shortly thereafter, purchased the Smith interests and the firm then became known as White & Wyckoff Mfg. Co. The company is devoted to the production of boxed papers and greetings card and numerous other converted articles.

The officers of the present company are:—chairman of the board and treasurer, Edward N. White; president and general manager, Harry C. Dutton; vice-president, Peter J. Peterson of Chicago; assistant treasurer, Edward P. White; director of sales promotion, Albert H. Sampson; manager of the papeterie department, George F. Abelein; manager of the greeting card department, Edgar L. Renner; directors, Edward N. White, Harry C. Dutton, Edward P. White, Stuart A. Russell, William H. Hubbard and Peter J. Peterson.

I.C.C. Fixes New Rates on Paper

WASHINGTON, D. C., July 31, 1939—The Interstate Commerce Commission last week prescribed North-South rates on paper and paper articles, in carloads, which are the same as the present South-North rates.

The South-North rate level already in effect is 110 per cent of the level within the North. The railroads were unable to agree on North-South rates and petitioned the commission for a solution.

In its decision the commission found a reasonable maximum level interterritorially would be somewhat higher than the level in the North and somewhat lower than that applying generally in the South.

"The present record (of evidence)," the commission wrote in part, "is persuasive that the present northbound rates are on a maximum reasonable basis. That level, northbound, supports the finding that the same level is a maximum reasonable level for application southbound. Nothing in this record, other than the difference in the rate level in the two destination territories, justifies a different level southbound than northbound. That difference is not a controlling factor here."

In the same decision the commission found the present rates on paper and paper articles, in carloads, in the North not to be unreasonable.

S. E. Brown Goes with Crossett

Sterling Brown, who for the past two years has been vice president and general manager of the Caldwell-Sites Company of Roanoke, Va., has joined the sales force of the Crossett Paper Mills and will be located at the general sales office at 80 East Jackson Boulevard, Chicago.

Following his graduation from Pennsylvania State University in 1931, Mr. Brown became associated with the Interstate Cordage and Paper Company at Pittsburgh. After considerable experience on the sales force, he was made Sales Manager, which position he resigned in the spring of 1937 to take over management of the Caldwell-Sites Company at Roanoke.

While in the merchant field Mr. Brown has actively participated in national as well as local paper trade association affairs. He has served as Chairman of the Specialties Committee of the National Paper Trade Association and during the past year has been Chairman of the Merchandising Committee.

His experience in the merchant field gives him a broad background of appreciation of merchant problems which should be invaluable to him in his new capacity.

Ira C. Keller Made Vice President

Following an action of the board of directors, the election of Ira C. Keller to a vice presidency of Container Corporation of America was announced by President Walter P. Paepcke last week.

A native of Washington, D. C., Mr. Keller was graduated from Rensselaer Polytechnic Institute. His business career started in 1920 with Westinghouse Electric and Manufacturing Company. Fourteen years ago Mr. Keller began his present connection as assistant general superintendent of the Sefton Manufacturing Company, a forerunner of Container Corporation. In addition to engineering Mr. Keller became increasingly absorbed in sales work, eventually taking over both responsibilities in one of the Corporation's carton manufacturing divisions. In his new post Mr. Keller will have supervision of sales and manufacturing of six of the company's Illinois, Indiana and Ohio properties. He has been a prominent figure in the paperboard and container industry for many years.

Textbooks Sales Keep Up

R. S. Kellogg, secretary of the Joint Textbook Committee states that a report from the McGraw-Hill Book Company shows a total of 1,179 copies of the textbooks upon The Manufacture of Pulp and Paper sold during the first 6 months of 1939, with total sales of the five volumes to date exceeding 31,000 copies. The details are as follows:

	6 Mos., 1939	Total To Date
Vol. I	48	4,646
Vol. II	40	3,839
Vol. III	227	9,392
Vol. IV	226	7,303
Vol. V	638	6,013
	1,179	31,193

Salesmen's Golf Outing

At the regular Monday luncheon of the Eastern Division of the Salesmen's Association of the Paper Industry held at the Hotel Lexington, New York on August 7, plans were announced for making the next golf outing a gala affair. This outing will be held at the Green Meadows Golf Club, Harrison, Westchester County, N. Y., on Thursday, August 24. The $6 charge covers all-day green fees and a good dinner. Early reservations are requested by the golf committee and should be sent to E. R. Lyman, Mississquoi Corporation, 41 Park Row, New York.

To Exhibit at Chicago Meeting

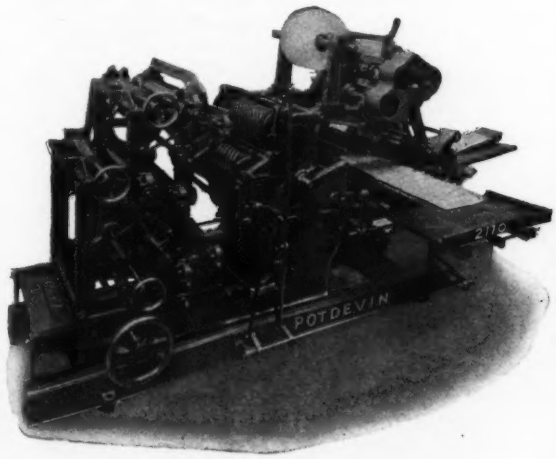
Arthur H. Chamberlain, executive Secretary of the National Paper Trade Association announces the following list of Exhibitors at Chicago Convention of the association to be held at the Stevens Hotel, September 18-20, whose reservations have been received to date:

Victoria Paper Mills, Container Corporation of America, Bay West Paper Company, Oneida Paper Products, Inc., Midland Products, Inc., Better Packages, Inc., Orchard Paper Company, The Crystal Tissue Company, Cleveland Mill and Power Company, Crossett Paper Mills, The American Paper Goods Company, Hoberg Paper Mills, Inc., Wolf Brothers, Fort Howard Paper Company, Sherman Paper Products Corporation, Racquett River Paper Company, Brown Company, Loroco Industries, Inc., The Hinde & Dauch Paper Company, Detroit Sulphite Pulp and Paper Company, Sealright Company, Inc., Dixie-Vortex Company, Universal Paper Products Company, The Hooven & Allison Company, Central Paper Company, Menasha, Sutherland Paper Company, Hy-Sil Manufacturing Company, A. P. W. Paper Company, John M. Hart Company, Inc., Lily-Tulip Cup Corporation, Nekoosa-Edwards Paper Company, Rexford Paper Company, Union Bag and Paper Corporation.

Potdevin Cellophane Sheet-Fed Press

The Potdevin Machine Company, of Brooklyn, N. Y., has announced the development of a new rotary sheet-fed printing press for cellophane. Although built for cellophane, Potdevin states that the press will print equally well, glassine, bond, kraft, sulphite and light board in one, two or three colors using oil-inks and metal plates or metal-backed rubber plates. Sheets up to 12 inches wide x 12½ inches long may be printed on this unit.

For easy inspection and collection of the printed sheets, the machine is constructed with a sidewise traveling belt delivery. An automatic counter kicks each 25th or 50th sheet out of line. A remote control permits the operator, without leaving his position at the feeder, to throw-off the impression cylinders so that miss-feeds do not print the tympan.



POTDEVIN 3-COLOR OIL-INK PRINTING CELLOPHANE SHEET-FED PRESS.

Since the inking portion may be racked back, plate setting and washing up are easy and quick.

For certain stocks that require a device to prevent offset, this press is equipped with an interleaving unit which cuts and places a sheet of paper between the freshly printed cellophane sheets as they are delivered.

The thorough method of distributing the ink through form rollers, vibrating rollers, etc., assures excellent coverage.

Mills Operate Despite Water Shortage

WATERTOWN, N. Y., August 7, 1939—Paper mills along the Black River report that there is no immediate danger of curtailing operations on some of their machines because of a shortage of water. For the past several weeks storage reservoirs have been providing about sixty per cent of the water in the Black River which supplies the majority of mills with operating power. It was stated that with a flow of from 1,000 to 1,200 cubic feet per second in the river, sufficient power would be generated to insure continued operation of mills. Mills in the vicinity of Lyons Falls, Lyonsdale and other Adirondack points, however, are already operating on reduced schedules because of a shortage of water. An official of a prominent paper mill declared that some mills may be forced to shut down entirely unless heavy rains relieve the situation. Four grinders in the ground wood mill of the Gould Paper Company, Lyons Falls, have shut down as a result of low water power and a paper machine at the Lyonsdale mill of the Moyer & Pratt Company has also been shut down for the same reason. Paper mills along the Beaver River are running at full capacity depending mainly on power from the Stillwater reservoir. The mills of the St. Regis Paper Company, Deferiet, are all operated by power from power plants and do not depend upon the river. Plants at Carthage are also running.

Charles W. Morrison Retires

HAVERHILL, Mass., August 7, 1939—Charles W. Morrison, sales manager at the Haverhill Division of Robert Gair Company, after 35 years of faithful service with the company, retired from his work, as of August 1. Mr. Morrison is widely and favorably known in the box and box board trade. On his return from a trip, on which he went after his retirement, he will continue to live in Bradford, Mass.

Union Mills Changes

The Union Mills Paper Manufacturing Company of New Hope, Pa., announces the retirement of William T. White, president for eighteen years and J. Parker Borden, treasurer for forty-four years. The management of the company will continue under the direction of Ferdinand R. White, president; Hugh W. Sloan, treasurer and Ralph G. Simonton, general manager.

George C. Andrew Convalesces

BOSTON, Mass., August 7, 1939—George C. Andrew, an executive of the Monadnock Paper Mills, Bennington, N. H., with offices in this city, is convalescing after a recent operation.

CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Financing and Operation of Pulp and Paper Mills

General Construction News

Chicago, Ill.—The Abell Box Corporation, 6550 South Lavergne street, manufacturer of corrugated boxes and containers, has closed negotiations for the purchase of three industrial buildings on site 600 x 664 feet at 1111 East Eighty-third street, heretofore held by the Hoyne Industrial Salvage Company. Company proposes to remodel and improve, and equip for new plant. It is understood that present plant will be removed to new location in near future and large increased capacity carried out. Company is affiliated with the Indiana Fibre Products Company, Marion, Ind., manufacturer of fiber boxes, plates and allied specialties.

Rochester, N. Y.—The Haloid Company, 6 Haloid street, manufacturer of photographic and other processed papers, and allied products, has approved plans for new addition to plant, to be one-story, reported to cost close to $45,000, with equipment. Bids have been asked on general erection contract and work is scheduled to be placed under way soon. S. Firestone, 59 South avenue, Rochester, is architect and engineer.

Pasadena, Tex.—The Champion Paper and Fibre Company, Hamilton, Ohio, has asked bids on general erection contract, through its Canton, N. C., offices, for proposed new addition to mill of Houston Division, Pasadena, recently referred to in these columns. It will consist of several large one and multi-story units, and will be used for finished paper production, including book and other coated stocks, bond and miscellaneous papers. New unit is estimated to cost close to $3,000,000, with equipment. It is expected to award contract at early date and begin work on project before the close of August. Plans for financing in amount to provide for the expansion are being consummated. H. K. Ferguson Company, Hanna Building, Cleveland, Ohio, engineer and contractor, has prepared plans for the plant and will tender a bid for the erection.

Milwaukee, Wis.—The George A. Schulz Company, 433 West Clybourn street, manufacturers of folding paper boxes and containers, has begun foundations for new addition to plant on site at 133 West Oregon street, to be two-story, 40 x 100 feet, with extension, 30 x 60 feet, designed primarily for storage and distributing service. General erection contract was let recently to Arthur C. Wolff, Inc., 1729 North Water street, Milwaukee, and miscellaneous contracts are being awarded for roofing, plumbing, heating, etc. Structure is reported to cost close to $40,000, with equipment. F. F. Drolshagen, 647 West Virginia street, Milwaukee, is architect.

Corinth, Miss.—Chairman Brooks Walker of the committee in charge of the canvass of Corinth and Alcorn county in the interest of securing underwriters for the proposed pulp mill to be located in this section, has called a meeting of his committee for a preliminary report of the work done to date. Satisfactory reports have been received from a number of the teams in the field but a full report from all teams has not been made. The committee had a goal of 40,000 acres of pine timberlands in this section at the outset of the drive. It is understood that a good percentage of this amount of acreage has been secured in pledges but the full amount is not known and the meeting this afternoon is to make a compilation of the work accomplished in order that the committee will have some idea of just how much more soliciting will be necessary to secure the required acreage. While enthusiasm is not high in the matter, the committee members have been plugging along, with the hope that the necessary pledges in acreage of pine timberlands would be signed up before the final date to cease work on the project. All pledges will be placed in the hands of trustees L. E. Watson and W. L. McPeters who will hold them until such time as actual construction work is begun on the pulp mill. The mill will probably be located near Burnsville, although engineers will determine where the mill is to be located. Approximately 350 men will be employed in the mill, in addition to the timber cutting and reforestation crews, it being the purpose of the mill authorities to reforest all acreage cut over in the process of cutting timber for the pulp plant. Farmers will receive $3.50 per cord for the timber cut from their lands, according to statements made here by sponsors of the project.

Fort Worth, Tex.—The Western Paper Box Company, Bluff and North Main streets, manufacturer of paper boxes and containers, plans rebuilding of portion of plant recently damaged by fire. An official estimate of loss has not been announced.

Circleville, Ohio—The Container Corporation of America, Inc., 111 West Washington street, Chicago, Ill., manufacturer of corrugated boxes and containers, has awarded general contract to the H. M. Wilson Company, Eighteenth and Brandywine streets, Philadelphia, Pa., for new power house, 50 x 60 feet, at branch mill at Circleville, used for strawboard manufacture for corrugating service. It is reported to cost close to $40,000, with boiler and auxiliary equipment. Work is scheduled to be placed under way at once.

Kitchener, Ont.—The Industrial Felt Company, Kitchener, manufacturer of paper mill felts, etc., is planning early rebuilding of portion of local mill on Guelph street, recently destroyed by fire, with loss reported at close to $30,000, including equipment.

North Bergen, N. J. — The Pioneer Paper Corporation, 78 Palisade avenue, Union City, N. J., commercial paper products, has leased a one-story factory at 929 Thirty-ninth street, North Bergen, on site totaling about 50,000 square feet of land, and will improve and equip for new plant. Present plant will be removed to new location and capacity increased.

Battle Creek, Mich. — The Michigan Carton Company, Battle Creek, manufacturer of coated carton stocks, chip board, manila stocks, etc., has plans maturing for new addition to mill, to be two-story, reported to cost close to $50,000, with equipment. It will be used largely for storage and distributing service. Bids are scheduled to be asked soon on general erection contract. Shreve, Anderson & Walker, Marquette Building, Detroit, Mich., are architects.

Chicago, Ill.—The Chicago Decalcomania Company, 4757 North Ravenswood avenue, manufacturer of processed paper stocks for transfers, etc., has arranged for purchase of a factory building at 3310 Elston avenue, heretofore held by Skilsaw, Inc. Structure is one-story, on site 125 x 125 feet, and will be used by purchasing company for a new plant, with removal from present location and installation of equipment for increased capacity. Early occupancy is planned.

Andover, Conn.—The Case Fiber Company, Andover, manufacturer of fiber products, has arranged for increase in capital from $20,000 to $70,000, for general expansion.

Arlington, Tex.—The R. C. Can Company, 101 Chambers street, St. Louis, Mo., manufacturer of paper cans and containers, mailing tubes, etc., has work under way on new branch plant at Arlington, recently referred to in these columns, and will push work to early completion. It will be one-story, estimated to cost approximately $50,000, with equipment. Quisle & Andrews, 3320 West Seventh street, Fort Worth, Tex., have contract for general erection. A list of equipment to be installed has been arranged.

Port Clinton, Ohio—The United States Gypsum Company, 300 West Adams street, Chicago, Ill., manufacturer of wall board and kindred products, has advanced production schedule at branch mill at Port Clinton, adding another shift for increased capacity. The mill is now running on a 24-hour daily basis, divided into four turns of six hours each, and seven-day week. It is proposed to continue on this schedule for an indefinite period.

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Merritton, Ont.—The Interlake Tissue Mills Company, Ltd., 388 University avenue, Toronto, Ont., manufacturer of tissue paper stocks, waxing papers, etc., has plans under way for new addition to mill at Merritton, to be one-story, reported to cost close to $50,000, including equipment. Bids are scheduled to be asked for erection at early date. N. Wagner, 378 Queen street south, Hamilton, Ont., is architect.

Carlton, Australia—The Omega Board Mills Pty., Ltd., Earl street, Carlton, Victoria, organized a few months ago, is arranging for immediate expansion in production of laminated board and paper specialties. Heretofore the company has been engaging largely in experimental work, and will now provide equipment for commercial manufacture.

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Editor Technical Section

Lynne M. Lamm
Washington Correspondent

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COMING EVENTS IN PAPER INDUSTRY

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY, Fall Meeting, Syracuse Hotel, Syracuse, N. Y., September 12-14.

NEW ENGLAND SECTION. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Roger Smith Hotel, Holyoke, Mass.

DELAWARE VALLEY SECTION. Technical Association of the Pulp and Paper Industry—Second Friday of each month at the Engineers Club, Philadelphia, Pa.

LAKE STATES SECTION. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

KALAMAZOO VALLEY SECTION. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

NATIONAL SAFETY COUNCIL, PAPER AND PULP SECTION, Annual Meeting, Atlantic City, N. J. October 16-20.

ENCOURAGEMENT FOR BUSINESS

Now that the first session of the Seventy-sixth Congress has ended and adjournment came with a burst of political fireworks, the business man has this much to be thankful for,—that the record of accomplishment might have been worse. There can be little doubt that business would have less confidence in the future if all of President Roosevelt's legislative program had been enacted. It is encouraging to know that the $3,000,000,000 lending program failed to pass. This bill, came before the Senate under the title of the Work's Financing Bill, earlier known as the Self-Liquidating Projects Bill. It advocated as a means of providing new investments in capital goods which it assumed private capital hesitated to undertake. The bill apprehended government competition with the normal channels through which cities and states obtain investment funds and also with forms of private enterprise ranging from highway transport and railroads to operation of buildings for business purposes. It is well that so unwise a proposal was ingloriously defeated.

In addition to this three-billion proposed expenditure for spending, must be added the $800,000,000 addition to funds for the Housing Administration, and a requested $50,000,000 for deficiencies in relief operations. Legislation was passed authorizing a $2,000,000,000 defense program. The President's monetary authority and the $2,000,000,000 stabilization fund was unchanged. The full appropriation of $1,755,600,000 for the new relief program was made, qualified with restriction on operations. The House authorized a $50,000 investigation of the National Labor Relations Board.

Although the Congress failed to pass legislation requested by President Roosevelt involving huge expenditures, it appropriated more money than at any other session in a time of peace, totaling $300,000,000 above budget estimates. But the long and bitter debate in the Senate which culminated in the defeat of the spending bill was a good service and it saved taxpayers hundreds of millions of dollars. This might well be interpreted as an encouraging omen by industry and trade and it may well be that its constructive nature will prove helpful to accelerate the present pace of general business activity which is expanding but slowly. Apparently the belief still exists in some quarters that the failure of loans to expand is due to excessive caution on the part of the banks and that business recovery is being impeded by the refusal of the banks to meet the legitimate credit requirements of commerce and industry, states the Guaranty Trust Company of New York in discussing some aspects of the credit impasse in the current issue of *The Guaranty Survey*.

"This view," *The Survey* continues, "seems to underlie the various proposals that have been made recently to extend the activities of the Federal Government in the lending field. Plans of this kind, regardless of their detailed provisions, rest upon the assumption that recovery is being blocked by the inability of business to obtain the necessary funds. For five years the Reconstruction Finance Corporation and the Federal Reserve banks have been authorized to make direct loans to industry, either alone or in cooperation with commercial banks. Yet, direct loans to business by these two agencies, according to the latest available figures, total only approximately $130,000,000, or one-half of one per cent of the total volume of bank loans outstanding."

In asserting that after several years of experience with industrial loans, the Federal Reserve Bank of New York reported that the great majority of inquiries for credit were received from business concerns whose financial position provided no sound basis for bank credit or whose needs for types of loans ineligible for the Federal Reserve banks under the law. "All the available evidence", continues *The Survey*, "indicates that existing private credit agencies are fully capable of supplying all the legitimate needs of business. The failure of credit to expand is attributable not to the inadequacy of the present financial system but to the burdens and restrictions on business concerns and investors that have, in many cases, made the outlook for profits too uncertain to attract capital into productive investments.

"Business obviously will not borrow unless there is a good prospect of earning interest charges on borrowed funds, with something left over. Banks cannot lend except to business whose credit standing and earnings prospects make it reasonable certain that the loans will be repaid. And investors will

not risk their funds without some assurance that the debtor firms will be able to put the money to profitable use and that, once the profits are earned, the investors themselves will be left in possession of the bulk of the returns. These indispensable bases of investment have been seriously impaired by taxation and regulation of business in recent years."

In reference to the attempt of the Government to force public funds over these artificial barriers, *The Survey* states in part: "The inevitable tendency of this policy will be to extend bureaucratic control over the lives of the people, to enlarge the powers of the Federal Government at the expense of those of States and municipalities, to threaten the soundness of public credit and the stability of the currency, and ultimately to substitute a form of state capitalism for the traditional American system of private business enterprise. The alternative to this forbidding prospect is to restore to business and investors a fair opportunity to earn and retain such profits as they may be fortunate enough to make, free from unnecessary governmental restrictions and from excessive and punitive tax burdens."

Passes Wood Pulp Resolution

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., August 9, 1939—Before Congress adjourned it passed the wood pulp resolution introduced recently by Senator Borah of Idaho, calling for an investigation. As the resolution finally passed it provided that:

"Resolved, That the United States Tariff Commission, under authority conferred by section 332 of the Tariff Act of 1930, is directed to investigate and report to the Senate all facts relating to wood pulp or pulpwood, showing the volume of importations compared with domestic production and conditions, causes, and effects relating to foreign competition, and all other facts showing the differences in, or which affect competition between, the production of wood pulp or pulpwood in the United States or that imported in the principal markets of the United States.

Such report to be made to the Senate not later than April 15, 1940."

Pulp For Open Market Increasing

The production of wood pulp for the open market increased substantially in 1937, the Forest Products Division of the Department of Commerce reports.

According to Bureau of the Census data, production of all wood pulp in the United States in 1937 was 33 per cent higher than in 1935, representing a rise of from 4,925,669 tons to 6,572,918 tons. In the same period, production of bleached sulphite wood pulp for sale in the open market increased 57 per cent and production of unbleached sulphite wood pulp for sale in the open market increased 61 per cent, according to the bureau.

Sulphate and soda wood pulp produced in this country in 1937 was consumed by producing plants or subsidiaries and had a negligible effect on the open market.

Production Ratio Report

The statistics are based upon paper production reports to the American Paper and Pulp Association.

COMPARATIVE MONTHLY SUMMARIES[1]

Months	1939	1938	1937	1936	1935	1934
January	77.5%	63.9%	90.3%	76.1%	65.8%	.....
February	81.7%	68.7%	90.1%	77.9%	70.0%	.....
March	84.0%	69.6%	90.3%	76.0%	70.5%	.....
April	82.9%	68.3%	92.1%	82.3%	70.0%	.....
May	80.2%	69.0%	90.6%	81.6%	69.4%	.....
June	79.5%	66.0%	87.3%	80.7%	72.3%	.....
July	73.9%	72.0%	81.8%	77.3%	64.9%	.....
August	.....	77.2%	82.9%	81.5%	70.9%	.....
September	.....	76.3%	78.6%	80.5%	71.9%	58.2%
October	.....	82.5%	73.5%	87.6%	75.6%	64.7%
November	.....	79.6%	61.9%	88.0%	75.3%	61.7%
December	.....	74.4%	54.5%	85.9%	71.2%	59.6%
Year Average	.....	72.3%	80.6%	81.3%	70.5%	.....
First 30 weeks	80.2%	68.2%	88.9%	78.8%	68.9%	.....

COMPARATIVE WEEKLY SUMMARIES[1]

CURRENT WEEKS, 1939		CORRESPONDING WEEKS, 1938	
June 24	79.0%	June 25	67.7%
July 1	81.1%	July 2	68.8%
July 8	56.4%	July 9	58.9%
July 15	81.1%	July 16	75.7%
July 22	80.5%	July 23	76.3%
July 29	80.1%	July 30	77.1%

The following statistics show the number of mills reporting by ratio groups:

	Number of Mills Reporting—Current Weeks					
Ratio Limits	June 24, 1939	July 1, 1939	July 8, 1939	July 15, 1939	July 22, 1939	July 29, 1939
0% to 50%	79	64	141	65	62	43
51% to 100%	226	241	158	227	223	154
Total Mills Reporting	305	305	299	292	285	197

PAPERBOARD OPERATING RATIOS

Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July
1935	62%	68%	68%	63%	61%	66%	62%
1936	62%	67%	67%	70%	69%	70%	69%
1937	80%	86%	86%	88%	85%	77%	66%
1938	54%	60%	61%	57%	58%	56%	57%
1939	60%	67%	71%	69%	64%	67%	.....

Year	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1935	67%	71%	77%	71%	61%	66%
1936	75%	78%	82%	80%	74%	72%
1937	74%	69%	65%	55%	45%	73%
1938	66%	66%	70%	65%	59%	61%

Week end. June 24, 1939—66%
Week end. July 1, 1939—70%
Week end. July 8, 1939—42%
Week end. July 15, 1939—71%
Week end. July 22, 1939—70%
Week end. July 29, 1939—70%

[1] Production-capacity ratios are based upon six-day capacity ratings which are adjusted periodically to correspond with the ratings reported by individual companies. Ratios are subject to revision until all reports are received.

Paper Bought Under Walsh-Healey Act

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., August 9, 1939—During the week ended July 22, the Government purchased $802,669.32 worth of paper and allied products under the Walsh-Healey Act as follows: check paper for the Treasury Department, from Barton, Duer & Koch Paper Co., Washington, D. C., $81,340.00[1]; mimeograph paper for the Navy Department, from Perkins-Goodwin Company, New York City, $58,451.02; toilet paper for the Veterans Administration from Zellerbach Paper Company, San Francisco, Calif., $10,800.00; paper for the Government Printing Office from Barton, Duer & Koch Paper Company, Washington, D. C., $259,568.10[1]; paper for the Government Printing Office from The Mudge Paper Company, Baltimore, Md., $137,904.00[1]; paper for the Government Printing Office from The Whitaker Paper Co., Baltimore, Md., $254,606.20[1].

[1] Indefinite contract other than General Schedule. Purchases to be made if and when needed.

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ZINC SULFIDE PIGMENTS IN PAPER

Section of the
Technical Association of the Pulp and Paper Industry

Edited by Ronald G. Macdonald, Secretary

Factors Influencing the Free Discharge of Stock from Sulphite Digesters*

By W. H. Kraske [1]

Abstract

The statistics and data given in this paper refer to five digesters located in one digester building, operated together, and receiving the same quality of wood, steam, chemicals and operating supervision.

It is herein indicated that the increased steaming rate near the end of the cooking cycle, steeper digester cones, and use of dry wood were aids to blowing digesters clean; however, the most important factors were the use of large blow valves and bottom fittings.

The purpose of this article is to point out the various factors that influence the blowing of sulphite digesters. The size and shape of fittings, shape of the bottom cone, the digester wood load, small diameter versus large diameter digesters and the steaming rate are some of the factors considered. The large digester fitting in this case proves to be the most important factor in blowing digesters clean. The various types of digester bottom fittings are illustrated and their relative merits are mentioned. The rate of steam flow and digester load are also factors that influence the discharge but these are minor ones when compared with the influence of large fittings. The term "blowing clean" means that all of the stock is blown from the digester, including the cone. The experiments extended over a long period of time.

Fittings

There are five illustrations which show various details of the digester fittings and the results obtained from them over long operating periods will be described. The difference in the construction and the sizes of the fittings is interesting. All the digesters are approximately the same size and the inside sleeves are about equal in diameter.

On digesters A and E the fittings are designed to give least resistance to the flow of material, a streamlined effect, whereas, on digesters B, C and D the fittings are of the straight bottom tee type that permit the easy removal of brick or strainers.

Small Fitting versus Large Fitting

The digesters shown in Fig. 1 (A and B) are the same size and contour, including the angle of slope of the bottom cones. The important difference between these two digesters are in the size and shape of the bottom fitting, the blow valve and the blow lines.

Digester A blows clean 86 per cent of the time and B blows clean only 15 per cent of the time. This is a marked difference and indicates clearly the advantage in the use of the larger fittings.

A 14 inch diameter blow valve and pipe are used on A and an 8 inch diameter valve is used on B. The vast difference in size of the 8 and 14 inch fittings may not have been necessary to accomplish these results but the use of the larger fittings practically eliminated the stock hold-ups.

Digester B, with the smaller fitting, is influenced to a considerable degree by the load and the rate of steam flow during the latter part of the cooking cycle. Wet wood and low steaming rates affect adversely the number of clean blow-downs.

Digester	A blew clean	86 per cent of the time
	B	15
	C	37
	D	55
	E	90

Digester B, when charged with wood of 46 per cent moisture content did not blow clean as many times as when charged with wood containing 35 per cent moisture. The amount of wood in the charge at the lower moisture content was greater than the charge of higher moisture content wood.

Digester B with 46 per cent moisture content wood held 31 tons of wood and blew clean 12 per cent of the time; and with 32 tons of 35 per cent moisture content wood blew clean 30 per cent of the time.

Digester C and D with 10 inch fittings and 52 degree cones blew clean 37 and 55 per cent of the time, respectively, against 15 per cent for Digester B with the 8 inch fittings.

Digester E blew clean, equipped with 12 inch fittings and steam nozzles, 95 per cent of the time.

These data indicate clearly the advantage to be obtained by the use of larger fittings.

52 Degree versus 60 Degree Cones

The digesters C and D are of the same size with fittings alike but the slope of the cone of digester C is 52 degrees, whereas, the cone of digester D slopes at an angle of 60 degrees. In all cases, digester D,

* Presented at the Annual Meeting of the Technical Association of the Pulp and Paper Industry, Roosevelt Hotel, New York, N. Y., Feb. 20-23, 1939.

[1] Member TAPPI, Sulphite Superintendent, Anglo-Newfoundland Development Co., Grand Falls, Newfoundland.

with the 60 degree cone, shows a higher percentage of blowing clean under conditions that are maintained as normal as possible.

It may be pointed out that digesters C and D with 10 inch bottom fittings and blow valves give a higher percentage of clean blows than digester B with 8 inch accessories.

Steam Nozzles and Large Fittings

The fitting and blow valve of digester E are 12 inch and designed, as previously mentioned, to give a stream-line effect. Seven one inch diameter steam inlets are located near the bottom of the cone of this digester. The influence of the steam nozzles as an aid to the discharge of the stock can only be conjectured. However, the combination of the large fittings and the steam nozzles results in practically all cooks being blown clean from the digester. The effectiveness of the steam nozzles lies in their aid to better circulation which may have some effect on blowing clean when the stock is discharged.

Dry wood was found to improve blowing conditions even when the same weight of wood was packed into the digesters, particularly in digesters B, C and D Dry wood had little or no influence on the blowing clean of digesters A and E.

Digester Diameters: Small versus Large

Much has been said in regard to the advantages of the tall and small diameter digester over that of the large diameter. In our experience with two digesters, one, 16 feet by 52 feet and one, 12 feet by 52 feet, the advantages are so much in favor of the larger diameter digester that the small diameter digester is used only when necessary. The ease of handling, blowing clean and better circulation are particular advantages gained by use of the large diameter digester.

Digester Load

The data given in the table below show the results of increasing the load of chips in the digester from 8.7 to 9.4 pounds, oven dry, per cubic foot, or about 4,800 pounds of chips added.

Digester A blew clean before increase in load	78%,	after 91%
B	13	19
C	30	43
D	60	43
E	90	95

These figures indicate that the heavier loads affected only digester D, which has a steeper cone, adversely, the heavier charge being an abnormal condition. The digesters A, B and C blew a higher percentage clean with the heavier load than with a lighter one.

Assuming a normal steaming rate of 5,000 pounds per hour for the last 3 or 4 hours of the cook, the percentage of digesters blown clean are as reported in the foregoing.

When the steaming rate was increased to 7 to 8,000 pounds per hour the following results were obtained.

Digester A blew clean	100 per cent of the time
B	40
C	45
D	55

These figures indicate that the increased steaming rate in the latter part of the cooking cycle is of some help in blowing digesters clean but it is a question whether this will offset losses caused by the higher temperature and faster cooking.

Germany Expands Raw Material Basis

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., August 9, 1939—Further progress was made in 1938 in placing the German paper manufacturing industry on a domestic raw material basis. It is stated that facilities will be available in the near future for converting annually 3 million cubic meters of fir into wood pulp. Another important achievement in the field of manufacturing wood pulp from domestic fir is claimed to consist in a new process which dispenses with the evaporization of wood fiber and which makes it also possible to produce from domestic fir pulp for the manufacture of paper other than wrapping paper and paperboard. Printing paper is mentioned particularly in this regard. However, it is also admitted that normal felling quota for fir is insufficient to cover the German paper industry's needs in wood which are estimated at 4,500,000 metric tons annually. On the other hand, the fact that at the present time the German paper industry is having to resort to domestic fir only to the extent of 10 per cent of its requirements in wood is quoted as an outstanding possibility in the matter of raw material supply from domestic sources.

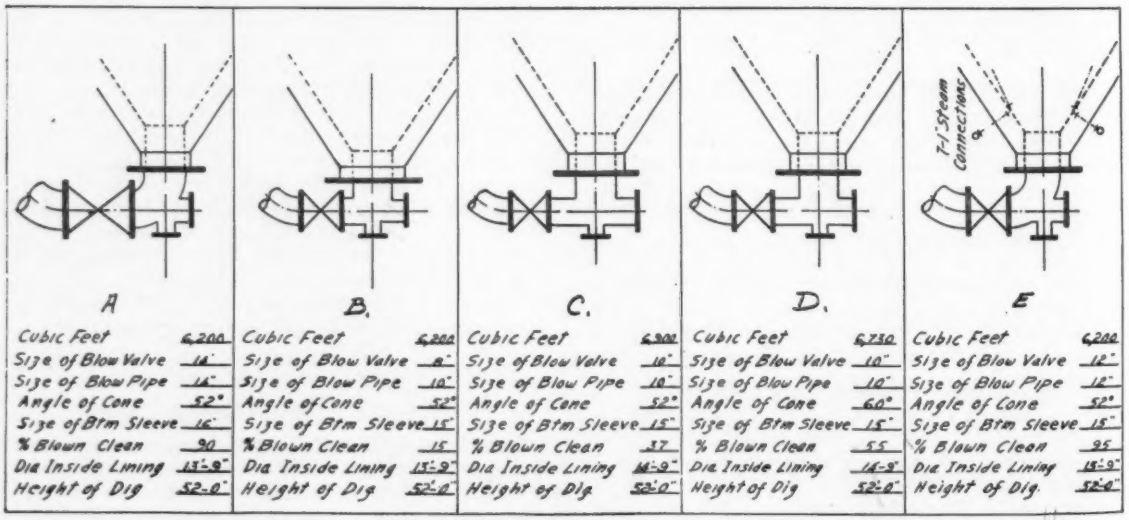

FIG. 1.

Fiber Dimensions*

By John H. Graff[1] and R. W. Miller[2]

Abstract

This paper gives a short comparative history of the different methods of fiber mensuration and also presents a standardized method for microscopic determination of fiber dimensions. This method is discussed in regard to probable errors and time requirement, the evaluation of the results, and its application to the determination of fiber dimensions of kraft pulp fibers from various geographical locations and wood species.

PART I[3]

History and Method

A large number of articles can be found in the literature giving the average lengths and, in some instances, the widths of different papermaking fibers. Some of those which have appeared are as follows: "The Length of Wood Pulp Fibers" by Sindall *(1)*, "The Length of Some Papermaking Fibers" by Sutermeister *(2)*, "The Characteristics of Fibers" by Maddox *(3)*, "Fiber Lengths of Pulp" by Richter *(4)*, "Length of Fibers" by Lee *(5)*, and "Microscopy of Pulpwoods" by Gerry *(6)*.

None of these articles, however, describes the method by which the different values have been obtained, the frequency distribution of the measurements made, or the probable error of the *modus operandi*.

One of the earliest publications describing an attempt to obtain a standard method of fiber measurements was a paper by Graff and Hodgdon *(7)*. This method, which has been further developed and refined, has been used for obtaining a large amount of fiber length data, and at the present time is used in the manner described later in this discussion.

Colditz of the German research station for the textile industry *(8)* suggested a novel method for determining the average lengths of fibers. He put pieces of paper between the jaws of specially constructed pliers, letting the ends of the samples protrude 5, 4, 3, and 2 mm. from the jaws. He softened the protruding ends and removed all free fibers by careful brushing. According to the author, the remaining fibers protruding from the jaws of the pliers were then 5, 4, 3, and 2 mm. long, and the relative amount of each could be determined by weight.

Smith *(9)* determined the average fiber length of beater stock by taking five samples from the beater during the time required for the stock to move once around the beater. Slides were made from each one of these samples. He stated that it was necessary to measure the lengths of 10 to 20 characteristic fibers for each slide, making a total of 50 to 100 measurements, and that his average error was only 0.03 mm. for average lengths of 1 to 2 mm.

Klemm in an article entitled "The Size of Paper Fibers" *(10)* did not describe the method used for the determination of fiber dimensions but mentioned significant facts not often considered in such a study. He pointed out that the limits of the lengths of the fibers in paper are from 0.1 to 3.0 mm. Longer fibers exist, occasionally having lengths of 4.0 mm. and more, but such cases are rare. He suggested for purposes of information classification into the following groups:

Long fibers	3-2 mm.
Medium fibers	2-1 mm.
Short fibers	1-0.1 mm.

Klemm found the limits of the widths of the fibers to lie between 0.01-0.04 mm. and suggested the following classification:

Thick fibers	0.040-0.025 mm.
Medium thick fibers	0.025-0.010 mm.
Thin fibers	0.010-0.002 mm.

Klemm, as well as Strachan *(11)*, has pointed out the importance of the relation of length to width of fibers.

Bergman and Backman *(12)* made a thin suspension on a slide, projected this at 70 diameters on a piece of white paper, and measured the lengths of the individual fibers directly with a perimeter ruler (a map measure), or they made pencil drawings of the projections for measurements at a convenient time. The authors, besides obtaining average fiber length, determined the weighted average length of the fiber mixture and the frequency distribution of the lengths of the total fibers measured.

Calkin *(13)* in 1930 published an article, "Measurements of Average Fiber Length," based on data and information obtained during association with the author of this paper.

Schulze *(14)*, as well as Bergman and Backman *(12)*, found that considerable experience was required in order to make direct micrometric measurements with the eyepiece micrometer and that the variations of the shapes of the fibers, or deviation from the straight form, made the work of measuring the lengths of the fibers extremely difficult. Schulze preferred the use of the projection method, in which a microscope is placed horizontally and the projection made downward on a white sheet of paper, where drawings or measurement could be made easily. He stated that at least 200 measurements must be made in order to determine the average fiber length.

To determine the effect of sulphite cooking upon the fiber length, Lampén *(15)* used the Bergman and Backman projection method, with a fiber density of 0.05 mg./cm.^{2}, but he measured only fibers of 0.5 mm. length and more.

Brecht and Mory *(16)* made a comparison of direct microscopic measurements and those obtained by the Bergman and Backman method; they considered the latter method better. A modification of the method described by Calkin *(13)* was used for preparing the fiber suspension. At least 400 individual measurements were made to determine the average length

* Presented (by title) at the Annual Meeting of the Technical Association of the Pulp and Paper Industry, Roosevelt Hotel, New York, N. Y., Feb. 20-23, 1939.

The historical section and Part II of this paper represents a portion of a thesis submitted by R. W. Miller in partial fulfillment of the requirements of The Institute of Paper Chemistry for the degree of Master of Science from Lawrence College, Appleton, Wis., June, 1938.

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[2] Student, The Institute of Paper Chemistry, Appleton, Wis.

[3] Prepared by John H. Graff.

of short fibers, and a minimum of 600 measurements was required to determine that of long fibers. These investigators stated that the frequency with which fibers of definite lengths appear in a given stock is a more important criterion of the fiber length than the arithmetical mean of the total number of fibers measured.

There are a number of other methods for measuring the length and width of fibers, but most of these are designed for determining fiber dimension characteristics of textile fibers.

In the last few years a number of screening methods have been developed which automatically classify the pulp suspensions into different groups, or fractions, of average fiber lengths.

Bixler *(17)*, working with the Mead classifier and a number of standard pulps, found that, on the basis of a rigorous fiber length distribution, the classifier used gave a very poor separation into the fine fractions. The sharpness of the classification depended almost entirely upon the number of long fibers passed and not at all upon the entrainment of fine material in the coarser fractions. The classification did not vary with the type of pulp used, nor with the mesh of the screen, but was mainly dependent upon the construction of the screening apparatus and, within reasonable limits of mesh size, was sharpest for the first screen in the series.

Steinschneider, Kross, and Imgrund *(18)* found by microscopic analysis that the screen classification does not separate beaten fibers according to their actual lengths, chiefly on account of the roughened fiber side walls and their adhering to each other by fibrils; it gives, however, a measure of the degree of roughening on which strength porperties depend.

A critical study of these and other articles indicates that, in general, previous workers in this field have measured only whole fibers, disregarding in most instances the large number of broken fibers which are present in any pulp sample. It is also evident that in some cases at least the technique of preparation of slides and method of measurement is open to question, probably because of a lack of appreciation of the importance of such technique on the final results.

Because of the influence of fiber length on the properties of pulps and also of the paper prepared therefrom and because of the possibility of comparing two pulps by use of the mean fiber length, it is obvious that, to secure a true evaluation of any pulp, it is necessary to measure not only the whole fibers but what may be called "fiber debris." It is appreciated that these values will vary from pulp to pulp, and that the values given below are illustrative only. All measurements have been made on *unbeaten* pulps.

Requirements of Standard Microscopic Fiber Dimension Methods

The following requirements have been set up for the microscopic determination of fiber dimensions:

1. The sampling and the preparation of the slides must be made in such a manner that the total number of fibers represents a true distribution of the different fiber dimensions present.
2. The fibers must be aligned parallel to each other on the slide, so that every fiber present, short or long, is accounted for; the fibers must not be broken or disintegrated in any way.
3. A standard number of measurements must conform with a reasonable time allotment and a minimum of probable error.
4. The method must be reproducible, and the personal element, so far as possible, must be removed.
5. The width as well as the length of the fibers must be considered, and the frequency distribution of the measurements taken must be expressed in relative distribution by weight as well as by number.

Fig. 1.
Slide for Fiber Measurements before and after Fibers have been Straightened.

Method

Ten grams of pulp or paper are disintegrated with distilled water in a 500-cc. Erlenmeyer flask and, by a process of decantation and addition of water, the mixture is diluted until the suspension contains approximately 0.1 gram of pulp per 1000 cc. of water, the concentration varying somewhat according to the average fiber length. Portions of this suspension are then transferred to four test tubes (6 inches long and ¾-inch outside diameter), the flask being thoroughly shaken before filling each tube.

By means of a dropper (5 mm. inside diameter opening), two drops are taken from each tube, the tube being shaken well before each drop is taken. One drop is placed on the end of a standard microscope slide, making a total of eight slides. If the suspension is properly prepared, each drop should contain approximately twenty-five fibers.

These slides are then thoroughly dried at 50 deg. C. in a drying chamber or on a hot plate. If the temperature is too high, the fibers will be cemented too strongly to the slide and may be broken during the straigtening process.

After the fibers are dried, the slide is put under a dissecting microscope, and a drop of calcium chloride-iodine-iodide stain is put on top of the fibers. After standing for some time, the slide is carefully tilted towards one corner, the surplus stain is examined for possible loose fibers, which must be teased back to the fiber mass, and the surplus stain is removed with filter paper.

The above stain is prepared by mixing 90 cc. of standard calcium chloride solution with 35 cc. of standard iodine solution *(19)*.

The slide is then clamped on the dissecting microscope and all the fibers, with the help of a dissecting needle, are straightened out and arranged side by side, parallel to the length of the slide, and a cover glass is carefully placed over the fibers as shown in Fig. 1, with one edge close to one end of the fibers. Then with a small pipet the iodine stain is irrigated under the cover glass from the edge nearest the fiber ends, and the surplus stain is drawn off with a filter paper from the other end of the cover glass.

The slide is then put under a microscope equipped with a mechanical stage, a 16-mm. objective, and, when lengths only are measured, any one of the different types of eyepiece micrometer scales. If fiber widths also have to be determined, a more accurate measurement can be made with a "Fillar Micrometer" eyepiece.

Each fiber is measured to the nearest one-half division on the micrometer scale, and the figures

recorded. A minimum of 200 measurements should be made; if the eight original slides are not sufficient, extra slides must be made. If 200 measurements are reached before a whole slide is finished, the rest of the fibers on that slide are measured and added to the others. The figures of all the measurements are added together and divided by the total number of measurements. The average micrometer reading is then multiplied by the conversion factor for the instrument used.

The 200 or more measurements will of course vary in length, depending upon the pulp, the kind of fibers, and the degree of treatment the pulp or paper has had. Both the average fiber length and the proportion of the percentage of the various lengths, by number and by relative weight, must, however, be taken into consideration.

Calculations

The percentage of frequency *(a)* is determined by dividing the number of fibers in a given interval by the total number of fibers in the sample and multiplying by 100.

The average length *(b')* is obtained by multiplying the average length *(b)* of the fibers in a given interval by the percentage frequency, and dividing the sum of these values for all intervals by 100, i.e.,

$$\Sigma\ (a \times b)/100.$$

The average width *(c')* is obtained in a similar manner.

The average weighted area is calculated from the formula

$$\Sigma\ (a \times b \times c)/100.$$

The frequency distribution by weight per 0.1 mm. interval is calculated by the formula

$$[(a \times b \times c)/\Sigma\ (a \times b \times c)] \times 100.$$

The divisions by 0.1 mm. intervals from 0.0-0.5 mm. and by 0.5 mm. intervals for the remainder of the unit lengths, as shown in Table I, have proved to be the most logical.

Typical Measurements

In certain instances, principally because of the time involved, only fiber lengths are determined. As pointed out below, this method does not give as accurate information as the combination of length and width measurements. However, the data for fiber lengths may be used as a basis for comparison of different pulps if it is not possible to measure the widths, and the frequency distribution, both by number and by weight, can then be calculated in the manner shown in Table I.

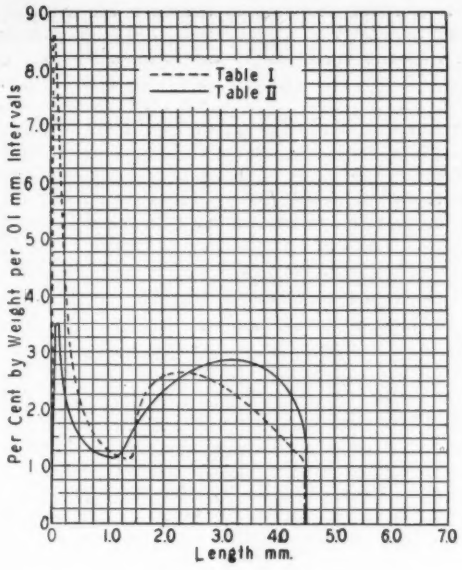

FIG. 2.
Fiber Length Distribution for Unbleached Jack Pine Pulp.

TABLE I.—PULP NO. 1, UNBLEACHED JACK PINE KRAFT

Intervals mm.	No.	Percentage Frequency *a*	Average Length, mm. *b*	*a* × *b*	Percentage by Weight
0.0-0.1	143	55.64	0.0633	3.5520	8.87
0.1-0.2	46	17.89	0.1428	2.5547	6.38
0.2-0.3	14	5.45	0.2346	1.2786	3.20
0.3-0.4	4	1.36	0.3263	0.5090	1.27
0.4-0.5	8	3.12	0.4613	1.4393	3.20
0.5-1.0	12	4.68	0.6787	3.1763	7.95
1.0-1.5	5	1.94	1.1880	2.3047	5.76
1.5-2.0	9	3.50	1.7300	6.0550	15.15
2.0-2.5	5	1.94	2.2500	4.3650	10.90
2.5-3.0	4	1.56	2.8125	4.3875	11.00
3.0-3.5	2	0.78	3.4538	2.6940	6.73
3.5-4.0	2	0.78	3.5550	2.7729	6.92
4.0-4.5	3	1.16	4.3047	4.9935	12.47
Sum	257			40.0525	

Average fiber length = 0.40 mm.

It probably will be a surprise to many to note the large number of very short fibers present in a coniferous pulp, but thousands of fiber length determinations, both of sulphite and kraft pulps, have shown this to be a normal condition. However, when the numbers are converted into relative percentages by weight, the proportion of small fibers is seen to be relatively small.

Actual measurements have shown that the width changes with the natural length of the fibers; there-

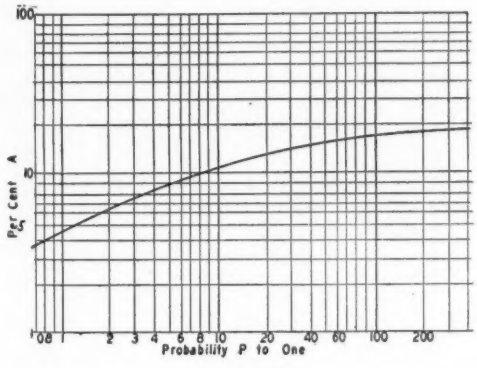

FIG. 3.
Probable Error in Fiber Measurement

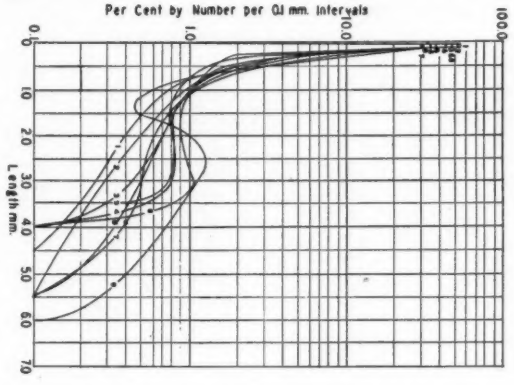

FIG. 4.
Frequency Distribution of Fibers by Number

fore, it is more accurate to measure the widths, as well as the lengths, to tabulate the fiber measurements into the usual length intervals with their corresponding widths, and to calculate the frequency distributions as shown in Table II.

This table and the curves in Fig. 2 show that the actual percentage by weight of the fibers from 0.0-0.1 mm. is only 3.46 instead of 8.87 as shown in Table I, and that the total percentage by weight of fibers from 0.0-0.5 mm. is only 11.62 as compared with 22.92 obtained by the first method.

Accuracy of the Method

In order to determine the accuracy of the method and the minimum number of measurements which should be made for the correct determination of the average fiber length, the author and Hodgdon *(7)* in 1920 prepared two sets of samples, one from a standard bleached sulphite pulp and one from a pulp beaten for fifty minutes in the ball mill. Two hundred slides of each pulp were prepared by the standard method. The average fiber length was computed for each 25 fibers, making a total of 200 averages; for each 50 fibers, 100 averages; for each 100 fibers, 50 averages; for each 200 fibers, 25 averages; for each 500 fibers, 10 averages; and, finally, the average fiber length of the total 5000 fibers was computed. The probable error is shown in Table III.

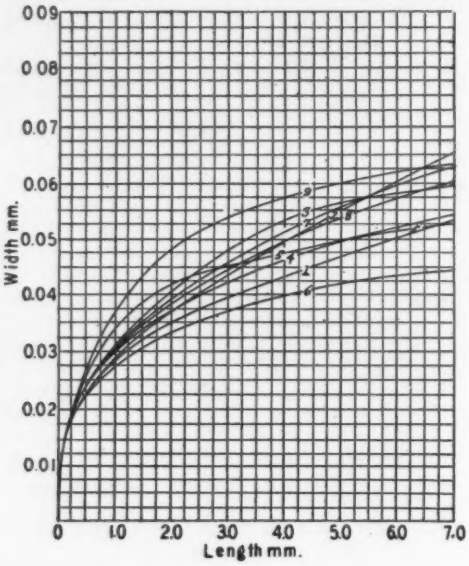

Fig. 5.
Ratio of Length and Width of Kraft Fibers

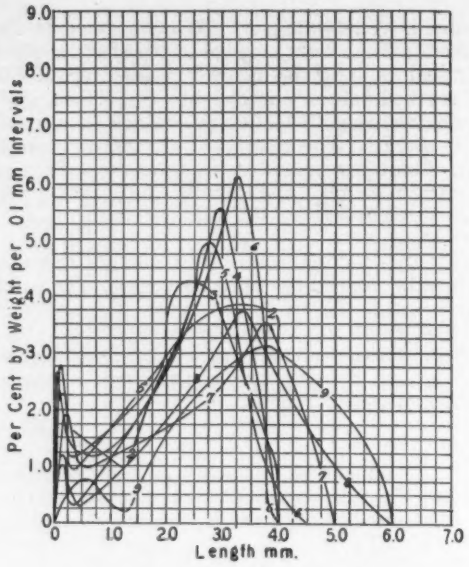

Fig. 6.
Frequency Distribution by Weight of Kraft Fibers

TABLE III.—PROBABLE ERROR IN FIBER LENGTH MEASUREMENTS

Total number of measurements	Probable error in mm.
150	0.08
200	0.05
300	0.04
400	0.03
500	0.03
1000	0.02
2000	0.02
3000	0.01

These figures show that 200 is the most practical number of fibers to be measured for a fair average of the length.

If a single average of 200 measurements is made, the probability that it will be within 5 per cent of the true average for the pulp is 1 to 1; that it will be within 15 per cent, 15-25 to 1; and that it will be within 20 per cent, 100-200 to 1. This is shown by the curve in Fig. 3.

The probable error of the various length-percentages with 200 measurements was also computed, with the following results:

TABLE IV.—PROBABLE ERROR FOR VARIOUS LENGTHS OF FIBERS

Length, mm.	Probable Error per cent
0-1	2
1-2	2
2-3	2
3-4	2
4	1

TABLE II.—PULP NO. 1, UNBLEACHED JACK PINE KRAFT

Intervals mm.	No.	Percentage Frequency a	Average Length, mm. b	a × b	Average Width, mm. c	a × c	a × b × c	Percentage by Weight
0.0-0.1	143	55.64	0.0633	3.5520	0.0126	0.7011	0.0448	3.46
0.1-0.2	46	17.89	0.1428	2.5547	0.0161	0.2880	0.0411	3.17
0.2-0.3	14	5.45	0.2346	1.2786	0.0158	0.0861	0.0202	1.56
0.3-0.4	4	1.36	0.3263	0.5090	0.0203	0.0317	0.0103	0.80
0.4-0.5	8	3.12	0.4613	1.4393	0.0236	0.0736	0.0340	2.63
0.5-1.0	12	4.68	0.6787	3.1763	0.0298	0.1395	0.0947	7.31
1.0-1.5	5	1.94	1.1880	2.3047	0.0283	0.0549	0.0652	5.03
1.5-2.0	9	3.50	1.7300	6.0550	0.0313	0.1096	0.1895	14.62
2.0-2.5	5	1.94	2.2500	4.3650	0.0419	0.0813	0.1829	14.12
2.5-3.0	4	1.56	2.8125	4.3875	0.0371	0.0579	0.1628	12.57
3.0-3.5	2	0.78	3.4538	2.6940	0.0396	0.0309	0.1067	8.24
3.5-4.0	2	0.78	3.5550	2.7729	0.0437	0.0341	0.1212	9.36
4.0-4.5	3	1.16	4.3047	4.9935	0.0444	0.0515	0.2217	17.12
	257			40.0525		1.7402	1.2951	

Average length/ average width ratio = 23.02
Average fiber length = 0.40 mm.
Average fiber width = 0.0174 mm.
Average weighted area = 0.0130 mm.²

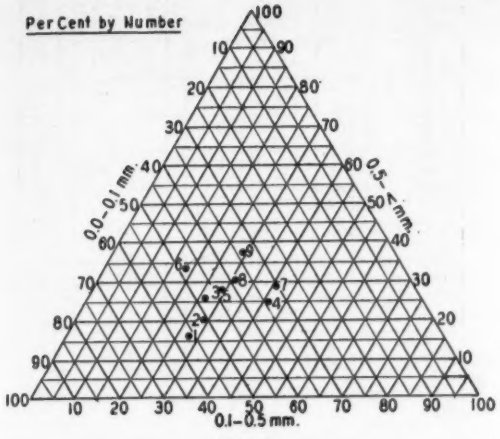

Fig. 7.
Percentage Distribution of Kraft Fibers by Number

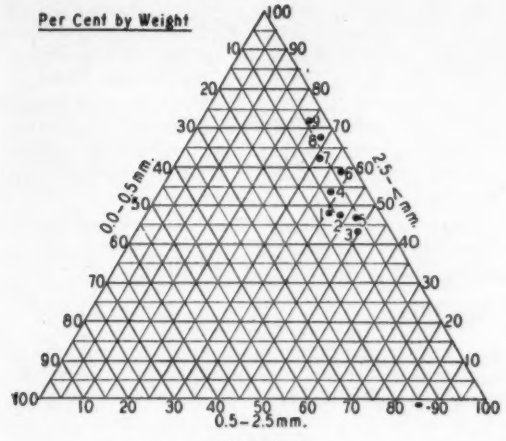

Fig. 8.
Percentage Distribution of Kraft Fibers by Weight

A very small percentage of this error is due to the mechanical method used or to the personal factor. The major source of uncertainty, however, is inherent in the method. With a variable such as the individual fiber length, which has a wide range of values, the theory of sampling predicts uncertainty of the same order of magnitude as that actually found. No improvement in technique would eliminate this limitation *(20)*.

The Personal Element

For the purpose of establishing a comparative standard by which the personal efficiency of an individual making fiber measurements could be judged, separate duplicate test measurements were made of 26 samples of pulps, ranging from unbleached and bleached pulps to special samples of beaten pulps. Both the original and the duplicate samples were given different numbers, and all the samples were prepared and measured by one person.

TABLE V

Deviation of Average Lengths mm.	Percentage of Number of Samples
0.005	16.60
0.015	12.45
0.020	4.15
0.030	20.80
0.035	12.45
0.040	8.30
0.045	8.30
	83.05% below 0.05 mm.
0.050	4.15
0.055	4.15
0.065	4.15
0.080	4.15

Table V shows the percentages of deviations from the average fiber length, in millimeters, between the duplicate samples. Since the total deviation below 0.05 mm. was 83 per cent. this must be considered a high individual standard of accuracy.

The average number of samples measured, including the disintegration of the pulps and the preparation of the slides, was three per day.

Fiber Length Evaluation

As has been pointed out, many workers in the field of fiber length determinations agree that the arithmetical mean or average fiber length is less important than the frequency distributions of the various lengths and the weighted mean.

Because of the large numbers of short fibers and relatively few long ones, as shown in Tables I and II, frequency distribution by number cannot be conveniently plotted on an ordinary coordinate chart; therefore, the frequency distribution by number is best plotted on a percentage chart (*see* Fig. 4). However, in many instances it is difficult to interpret the fiber length characteristics of a number of pulps even by this method.

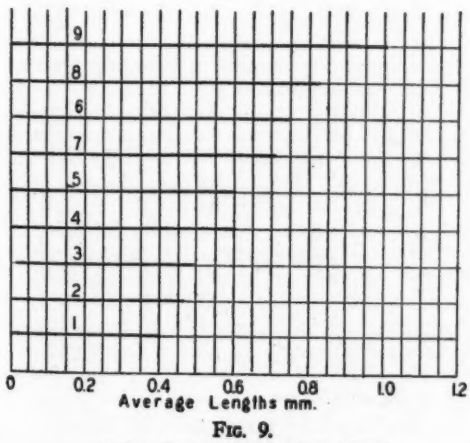

Fig. 9.
Average Length of Kraft Pulp Fibers

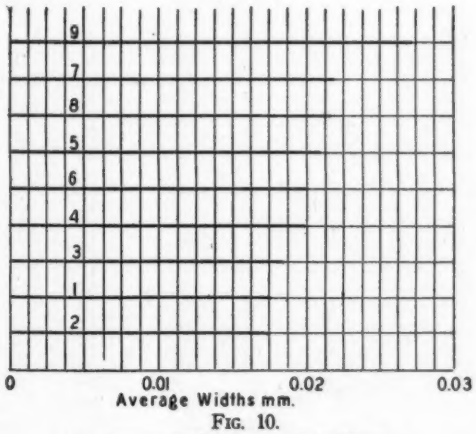

Fig. 10.
Average Width of Kraft Pulp Fibers

The best method of judging the frequency distribution of the different fiber lengths in a pulp or paper is to plot the percentage by weight of the different unit lengths on an ordinary coordinate chart (*see* Fig. 6). One of the best methods of plotting fiber length characteristics, however, is to plot the percentage of short, medium, and long fibers, either by number or by weight, on a regular triangular chart (*see* Figs. 7 and 8).

The author has found that, in plotting the percentage of short, medium, and long fibers by *number*, the following divisions are practical:

Short	Medium	Long
0.0-0.1 mm.	0.1-0.5 mm.	0.5 mm.

In plotting the percentages of short, medium, and long fibers by *weight*, the divisions have to be modified according to the types of fibers measured; e.g., in most hardwood pulps it would be rare to find fibers more than 2 mm. long and in such a case the following divisions probably would be more correct:

Short	Medium	Long
0.0-0.5 mm.	0.5-1.5 mm.	1.5 mm.

Plotting the distribution of short, medium, and long fibers by number has the advantage that it can be done with very little additional work after the fiber measurements have been recorded. Such a plot of fiber distribution, either by number or by weight, furnishes a convenient method of comparing beater results or beater efficiency.

Other methods of comparing fiber dimensions are shown in Figs. 9, 10, 11, and 12; Fig. 11 is probably the most striking.

PART II

The Relative Lengths and Widths of Commercial Kraft Pulp Fibers From Various Geographical Locations and Wood Species*

The lengths and widths of several different unbeaten standard kraft pulps were measured by the method described in this paper, and the fiber length distributions of short, medium, and long fibers, both by number and by weight, were determined. The frequency distribution curves and all other methods for expressing the fiber dimensions of the different pulps indicate certain definite characteristics of the pulps examined.

* Prepared by R. W. Miller.

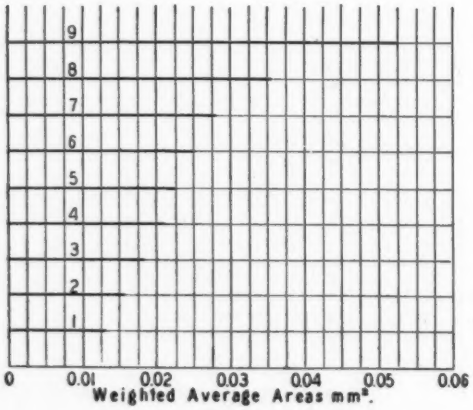

FIG. 11.
Average Weighted Area of Kraft Pulp Fibers

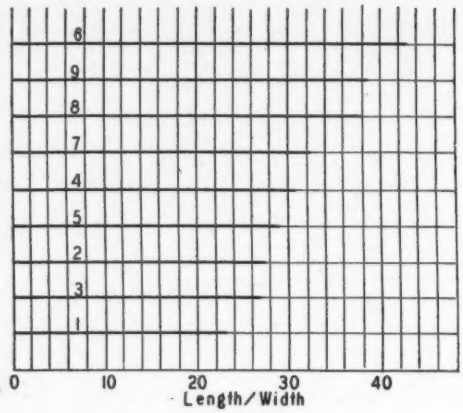

FIG. 12.
Length/Width Ratios of Kraft Pulp Fibers

The following standard kraft pulps were examined: (1) Unbleached jack pine, (2) unbleached Canadian scrub pine, (3) bleached Canadian scrub pine, (4) unbleached Swedish kraft, (5) bleached Swedish kraft, (6) unbleached spruce kraft, (7) unbleached western hemlock, (8) unbleached southern pine, and (9) unbleached western white fir.

Bleached pulps were included in this study to show that the determination of fiber dimensions may be used in the study of such pulps as well as unbleached pulps, and also to indicate that the change of fiber dimensions by bleaching may, in many cases, be very important.

The results of the measurements and the calculations are given in Table VI.

TABLE VI.—DATA FOR KRAFT PULP FIBERS

	Av. Length (b) mm.	Av. Width (a') mm.	Av. Weighted Area sq. mm.	b'/a'
1. Unbleached jack pine.....	0.4005	0.0174	0.0130	23.02
2. Unbleached Canadian scrub pine	0.4661	0.0171	0.0157	27.27
3. Bleached Canadian scrub pine..	0.4944	0.0183	0.0182	27.02
4. Unbleached Swedish kraft.....	0.6025	0.0197	0.0211	30.58
5. Bleached Swedish kraft.....	0.6030	0.0207	0.0226	29.13
6. Unbleached spruce kraft.....	0.7529	0.0176	0.0248	42.78
7. Unbleached western hemlock....	0.7064	0.0218	0.0285	32.40
8. Unbleached southern pine.....	0.8263	0.0128	0.0354	37.90
9. Unbleached western white fir...	1.0547	0.0274	0.0525	38.63

The frequency distribution by number per 0.1 mm. intervals of these pulp fibers is shown in Fig. 4; however, these curves, as stated in the first part of this paper, do not give a very good delineation of the differences between the fiber length distributions of the different pulps.

Figure 5 shows a definite relationship between the lengths and the widths of the fibers, i.e., the longer fibers are the widest. The widths increase much more rapidly for the shorter fibers, but eventually the widths tend to become constant for any further increase in length. Figure 5 shows also the variation of width in relation to length for the different types of pulps. Unbleached western white fir and bleached Canadian scrub pine increase the most in width per millimeter increase in length, and unbleached jack pine and unbleached spruce kraft the least.

The percentage of frequency distribution by weight per 0.1 mm. intervals is shown in Fig. 6; these curves show definite modes in the ranges 0.0 to 0.2 mm. and 2.0 to 4.0 mm.

The percentage of distribution by three intervals (short, medium, and long fibers), both by number

and by weight, is shown in Tables VII and VIII and in Figs. 7 and 8.

TABLE VII.—DISTRIBUTION OF FIBERS BY NUMBER

Pulp No.	0-0.1 mm. per cent	0.1-0.5 mm. per cent	0.5 mm. per cent
1	55.64	28.02	16.34
2	51.64	29.11	19.25
3	48.68	27.87	23.45
4	34.13	41.38	24.49
5	42.84	29.66	27.86
6	48.22	18.60	33.17
7	30.33	41.03	28.64
8	38.83	30.15	31.02
9	33.18	29.02	37.80

TABLE VIII.—DISTRIBUTION OF FIBERS BY WEIGHT

Pulp No.	0-0.5 mm. per cent	0.5-2.5 mm. per cent	2.5 mm. per cent
1	11.62	41.09	47.29
2	9.63	43.50	46.87
3	7.38	49.96	42.66
4	7.67	37.82	54.51
5	5.45	47.29	47.26
6	3.22	38.01	58.77
7	6.38	31.33	62.29
8	3.50	27.53	68.97
9	3.02	24.62	72.36

The data of Table VII show that the pulps have 30 to 56 per cent of fibers less than 0.1 mm. in length, 19 to 30 per cent of fibers from 0.1 to 0.5 mm. in length (pulps 4 and 7 are exceptions), and 16 to 38 per cent of fibers more than 0.5 mm. in length.

The distribution by weight (Table VIII) is as follows: 3 to 12 per cent in the interval of 0.0 to 0.5 mm., 24 to 50 per cent from 0.5 to 2.5 mm., and 47 to 72 per cent above 2.5 mm.

The triangular representations of short, medium, and long fibers by number and by weight give a clear picture for a practical comparison of the fiber length values of the different pulps.

All of the pulps measured have about the same percentage by weight of short fibers. However, the western hemlock, southern pine, and western white fir have more than 62 per cent long fibers and 28 per cent medium long fibers, whereas the Swedish and eastern kraft have about 47 per cent long fibers and 43 per cent medium long fibers.

Figure 9 shows the arithmetical average fiber length of the pulps, and Fig. 10 shows the arithmetical average fiber width. A comparison of the two figures again shows that the width of the fibers increases with the average length. The jack pine and the two Canadian pine krafts have considerably shorter average fiber lengths than those of unbleached southern kraft and western white fir.

The weighted average fiber areas, as illustrated in Fig. 11, probably more than any other representation, show the tremendous difference between the fiber characteristics of these pulps, and, although it has been customary to judge beating qualities of pulp by their average length width ratio (*see* Fig. 12), the weighted average area may give a better indication of the quality of the pulp fibers.

Conclusions

1. The calculated number of fibers less than 0.5 mm. long in a pulp may be as much as 85 per cent of the total number of fibers; however, this may be only 12 per cent by weight of the pulp.

2. Spruce kraft, southern pine, and western fir have the greatest average fiber length of the pulps measured.

3. Western hemlock, southern pine, and western white fir have the greatest average fiber width.

4. The spruce kraft has the greatest fiber length per width ratio.

5. Fiber width increases with increase in fiber length. The increase is rapid at first and then decreases toward a constant fiber width.

Literature Cited

(1) Sindall, R. W., *Paper Makers' Mo. J.*, March 15, 1904.
(2) Sutermeister, E., *Pulp Paper Mag. Can.* 12, no. 2:43-4 (Jan. 15, 1914).
(3) Maddox, H. A., *Pulp Paper Mag. Can.* 13, no. 21:551-53 (Nov. 1, 1915).
(4) Richter, Erich, *Wochbl. Papierfabr.* 46, no. 45:2021-22 (1915).
(5) Lee, H. N., and Hovey, R. W., *Pulp Paper Mag. Can.* 16, no. 20:446-448 (May 16, 1918).
(6) Gerry, Eloise, *Paper* 26, no. 7:26 (April 21, 1920).
(7) Graff, John H., and Hodgdon, Marie, *Paper* 23, no. 13:11-15 (Dec. 4, 1918).
(8) Colditz, W., *Paper Trade J.* 72, no. 2:56 (Jan. 6, 1921).
(9) Smith, Sigurd, *Paper* 32, no. 14:5-6, 17-18 (July 25, 1923).
(10) Klemm, Paul, *Wochbl. Papierfabr.* 59, no. 23A:88-95 (1928).
(11) Strachan, J., *World's Paper Trade Rev.* 83:2110, 2112, 2114 (June 26, 1925); 84:42, 44, 46 (July 3, 1925).
(12) Bergman, G. K., and Backman, Albert, *Papier-Fabr.* 27, no. 29: 449-456 (July 21, 1929).
(13) Calkin, John B., *Paper Trade J.* 91, no. 9:44 (Aug. 28, 1930).
(14) Schulze, Bruno, *Papier-Fabr.* 29, no. 1:4-5 (1931).
(15) Lampén, Aleks, *Pulp Paper Mag. Can.* 31, no. 30:853, 866 (July 23, 1931).
(16) Brecht, W., and Mory, H., *Zellstoff u. Papier* 14, no. 12:492-495; 15, no. 4:150-153, no. 6:237-238 (Dec., 1934; April, June, 1935).
(17) Bixler, A. L. M. Study of Relationship Between Fiber Length and Fractionation. Master thesis, Institute of Paper Chemistry (June, 1935).
(18) Steinschneider, M., Kross, H., and Imgrund, L., *Papier-Fabr.* 34, no. 23:177-183 (June 7, 1936).
(19) Graff, John H., *Paper Trade J.* 100, no. 16:43-50 (April 18, 1935).
(20) Van Arsdel, W. B., *Paper* 23, no. 13:15 (Dec. 4, 1918).

Modern Concepts of Stream Pollution From Paper Mills*

By Christian L. Siebert[1]

Abstract

The present standards of stream cleanliness are much higher and more definite than they were only three or four years ago.

The biochemical oxygen demand is a more important measure of pollution from paper mills than any other factor heretofore commonly applied.

The reduction of white water waste to less than 10,000 gallons per ton of product and of fiber loss to less than 10 pounds per ton is generally practicable and economical and will in almost all instances automatically reduce the pollution factor to below a population equivalent of 30 per ton of paper.

The chemical coagulation and sedimentation of white water waste may be necessary if a nearly closed system is not practicable and, in some instances, additional treatment by biological methods may be required to reduce dissolved organic matter.

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Intensive and well directed research must be applied to develop practical methods for treating wastes from de-inking processes, soda pulp mills and rag digesters.

Until a few years ago the opinion was quite generally held that the promiscuous discharge of industrial wastes to streams was a necessary evil and a fair sacrifice to prosperity. The positive results attained in recent years in abatement of stream pollution by construction of municipal sewage treatment works and the concurrent growth of industry with an increase in the quantity of industrial wastes has caused public opinion to change. The view quite generally held at present, and still growing strongly, is that streams belong to the public and must be kept clean in spite of the lamentations of a few shortsighted champions of industry who have not kept pace with the times.

Many states have adopted laws regulating pollution of streams from industrial wastes as well as from sewage. Congress at its last session passed a bill to control industrial waste pollution and this was vetoed by the President, allegedly, because it was not sufficiently complete. New pollution control bills have been introduced in the present Congress and it is generally expected that a strong bill will be passed to make pollution control nationally effective.

The Pennsylvania legislature in 1937 passed a new pollution control law which places industrial wastes under the same rigid control as sewage and whose theme is the following definition:—" 'Pollution' shall be construed to mean noxious and deleterious substances rendering unclean the waters of the Commonwealth to the extent of being harmful or inimical to the public health, or to animal or aquatic life, or to the use of such waters for domestic water supply, or for industrial purposes, or for recreation."

All new movements are accompanied by the activities of extremists. This was particularly true with the early efforts to administer the new Pennsylvania pollution control act. Sportsmen and conservationists insist that the provisions of the law should be interpreted in their strictest sense and that any waste discharge whatsoever, whether a quart or a million gallons, should be prohibited if its quality is such that fish can not live in it as discharged. This viewpoint is contrary, and admittedly so, to principles of assimilation of pollution by self purification in streams, as generally accepted by all engineers and scientists who have fairly and without prejudice studied the effects of stream pollution. A recently published technical paper aptly defines the sanitary engineer's conception of a stream as "not merely a body of water but a chemical and biological treatment plant with a limited capacity". However, the contentions of radical conservationists stand as a warning that stream pollution must be effectively controlled or the already aroused general public will insist on the adoption of even more drastic regulatory measures than now exist or are proposed.

Effect on Pulp and Paper Industry

The pulp and paper industry is particularly affected by the new concept of pollution control because old and established processes of manufacture produce immense quantities of polluting wastes. It was common practice for generations to discharge waste waters from both pulp and paper mills without any treatment or modification whatsoever. But economic and esthetic requirements have changed. Industry learned that it was throwing away valuable materials. Mills grew in individual size with consequent increase of local pollution beyond the limit of tolerance. The aroused public, asserting its ownership of streams, has become militant in its demand for clean water for drinking, for the support of fish life, for recreational purposes and for that intangible but impressive something termed common decency. This is not a conflict of the State versus Industry but simply the logical conquest over poor economics and special privilege.

As early as 1931 C. M. Baker, engineer of the American Paper and Pulp Association, published his opinion that it was practicable to keep fiber losses in white water wastes under 1 per cent and the volume of wastes below 20,000 gallons per ton of product. Mr. Baker has since then repeatedly confirmed that statement. State health authorities engaged in control of pollution, notably in Wisconsin and in Pennsylvania, for some years considered Mr. Baker's standards as a reasonable goal and were quite successful in having many mills meet these requirements, largely because the close white water system almost invariably resulted in savings in both fiber and water beyond the cost of the improvements. Naturally, a few unprogressive mill managements still stubbornly object to the installation of the closed system because their forefathers contended that production of a good sheet required an abundance of fresh water, even though they would ridicule similar stagnation of thought in other things.

Bio-chemical Oxygen Demand

The reduction in fiber losses quite generally results in marked improvement of the receiving stream due to elimination of sludge deposits which smother useful aquatic plant life and so prevent oxygen recovery and assimilation of pollution. Also, the absence of sludge deposits eliminates the septic action, particularly during periods of high temperature, which robs the stream of dissolved oxygen.

However, it has been found that reduction in volatile suspended solids (fiber) in waste waters is often insufficient improvement to maintain the 3 or 4 parts per million of dissolved oxygen necessary in streams to support fish life and to insure against nuisance conditions. The volatile dissolved solids remaining in the wastes after removal of practically all fiber impose a pollution load which is quite definitely measurable by the standard bio-chemical oxygen demand (b.o.d.) test which has for years been accepted as the measure of pollution from domestic sewage.

It is quite generally accepted that untreated domestic sewage has an average b.o.d of about 200 parts per million and depletes the oxygen in a receiving stream at the rate of about 0.167 pound per person per day. Primary sewage treatment by effective sedimentation reduces this pollution load about 35 per cent or to 0.11 pound. So-called complete sewage treatment carries the reduction on to about 85 per cent with a resultant average b.o.d of about 30 parts per million or approximately 0.025 pounds oxygen demand per person per day.

Since the b.o.d. test and its concomitant fac-

tors are accepted as the most practical guides in evaluating pollution loads and their effects in general it is only logical that these factors should be applied specifically to the paper mill waste problem in a manner to be readily understood by paper mill operators as well as by sanitary engineers. Hence the adoption of the factor "sewage population equivalent per ton of product" which, based on figures cited in the previous paragraph, means that whereas the untreated sewage of one person per day depletes dissolved oxygen in the receiving stream by 1/6 (0.167) pound the "sewage population equivalent" of paper mill wastes would be six times the pounds biochemical oxygen demand of the wastes measured against each ton of product. This yardstick of pollution load has been in use in Pennsylvania for some time, in addition to the measure of fiber loss, and it is interesting to note *(1)* that the Wisconsin Board of Health is applying similar factors in its measurement of pollution from paper mills.

In the Table are set forth data concerning quantities of waste water, sewage population equivalents and suspended solids in waste waters at ten typical mills in Pennsylvania before and after the adoption of measures for reduction of pollution. The table includes a notation indicating the method of waste control adopted.

Comparison of the factors of pollution before and after improvement are plotted in a graph (Fig. 1) from which it will be noted that there appears to be a fairly consistent relationship in the quantity of waste water, population equivalent and volatile suspended solids and where the relationship is not in the expected order it is at least partly attributable to the varieties of stock used in the furnish. Naturally, a furnish consisting of dirty used paper will produce a white water containing more volatile dissolved solids and decomposable material than if it were produced from a well washed chemical pulp. Increase in furnish containing organic size such as casein or ground wood with its content of lignin, sugar and other soluble organic matter causes increase in volatile dissolved matter which is directly reflected in the b.o.d. which is the measure of decomposability.

It is not to be expected that there would be a consistent relationship between the percentage reduction of the quantity of waste white water, population equivalent and volatile suspended solids because some mills had begun to economize before the original surveys were made and, also, because differences in

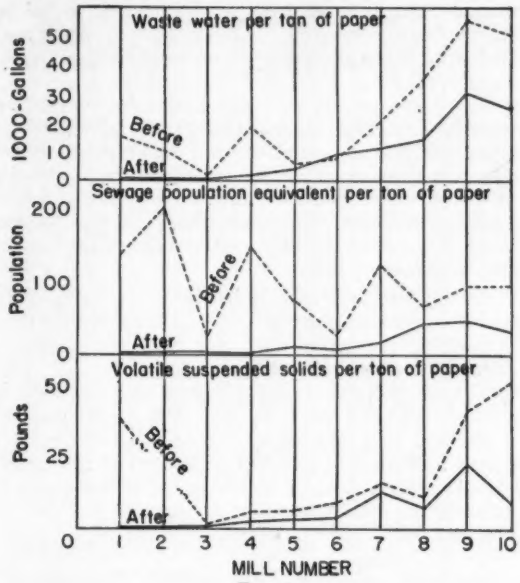


FIG. 1.

Graphic Comparison of Waste Water Pollution Factors Before and After Adoption of Control Measures At Ten Typical Paper Mills.

furnish produce varying proportions of dissolved versus suspended solids, but the average per cent reductions are of such consistent order that they appear to prove unquestionably that the three factors are inseparably related. Probably the most outstanding is the evidence, in agreement with other paper mill waste water studies, that reduction in the quantity of white water is ordinarily the principal factor in pollution control. The flattening and smoothing of the graphs indicating the pollution factors after improvement, as compared with before improvement, are truly striking and should convince anyone that it is just as practical to reduce pollution from paper mills as that from domestic sewage and, curiously, the average reduction of 83 per cent in sewage population equivalent attained by the ten typical mills herein considered is practically identical with the reduction of 85 per cent in pollution load ordinarily attainable in modern treatment of domestic sewage.

Savings by Mills

Of particular interest is the almost completely

TABLE I.—WASTE WATER POLLUTION FACTORS BEFORE AND AFTER ADOPTION OF CONTROL MEASURES AT TEN TYPICAL PAPER MILLS

	Gallons Water Per Ton			Sewage Population Equivalent per Ton			Volatile Suspended Solids per Ton			
Mill Number	Before Correction	After Correction	Per cent Improvement	Before Correction	After Correction	Per cent Improvement	Before Correction	After Correction	Per cent Improvement	Method of Improvement
1	15200	0*	100	139	0*	100	38.2	0*	100	(Completely closed system * Weekly clean-up settled before discharge but not included).
2	10750	67	99	202	0.4	99	...	0.6	..	Closed system and final sedimentation of clean-up.
3	1300	195	85	30	3	90	1.3	.4	69	Closed system except clean-up.
4	18800	1908	90	150	3.2	79	6.4	3.0	53	Save-all and closed system.
5	5400	4406	18	77	13.4	82	6.7	3.3	51	Save-all and partially closed system.
6	8960	9959	—11	28.5	8.5	70	9.1	4.1	55	Coagulation and sedimentation.
7	20200	12330	39	130	18	85	16.1	13.5	16	Partially closed system
8	34800	14080	60	71	43.6	39	11.0	6.6	40	Save-all and partially closed system.
9	51000	25433	50	95	34	64	50.8	9.3	82	Adka save-all and partially closed system.
10	56500	31333	45	96	48	50	41.9	24.1	42	Save-all and partially closed system.
Ave.	22290	9971	45	102	17	83	18.2	6.5	64	

NOTE:—Mill No. 4 produces towels, No. 9 fine paper, No. 10 tissue and the others are board mills.

favorable reaction of mill managements to white water pollution control. The savings in fiber and actual improvement in quality of product practically always more than pay for the cost of the treatment. The exceptions would be mills where the completely or nearly completely closed system is claimed to be impractical and coagulation and sedimentation of white water waste must be practiced, but even in such cases, it is reported, the final costs are reduced by savings in water and fiber stimulated by the desire to economize in the cost of operating waste water treatment systems.

From the data submitted in the table, as well as from other observations, the writer is convinced that practically every paper mill can, without hardship, reduce its waste white water volume to less than 10,000 gallons per ton of product and so reduce fiber losses to less than ½ per cent or 10 pounds per ton and also, incidentally, accomplish 70 to 100 per cent reduction in true pollution load as measured by b.o.d., with a final pollution factor not exceeding 5 pounds oxygen demand or a sewage population equivalent of 30 per ton of paper produced.

Sulphite and Soda Pulp Liquor Wastage

Probably the most notorious if not the most common waste from the paper industry is sulphite pulp liquor. The pollution load of this waste has been found to be approximately 200 pounds oxygen demand or a sewage population equivalent of about 1200 per ton of pulp produced.

There are four sulphite pulp mills in Pennsylvania. Two of these mills practice evaporation of some concentrated waste liquor for production of a cheap adhesive and so appreciably reduce the pollution load. One small mill is about to discontinue the operation of its pulp department partly because of pollution difficulties. The fourth and largest mill, located at Johnsonburg on the now highly polluted Clarion River, has just completed the installation of an elaborate system for treatment of its spent sulphite liquor and this equipment is now in operation on an experimental scale with every prospect of success.

The Johnsonburg sulphite waste treatment plant comprises.

Chemipulp process for re-utilizing strong acid and thereby reducing the total sulphur consumption, chip packing in the digesters to expose a greater quantity of chips to a given quantity of acid at each cooking, efficient separation of liquor from stock at maximum concentration, neutralization of liquor and reclamation of calcium monosulphite, and evaporation and burning.

Studies are under way to develop useful byproducts from this process and, although no sensational recoveries are expected, there is hope that the costs of plant operation may be at least partly retrieved.

The Johnsonburg process is confidently expected to eliminate 85 per cent of the previous pollution load since it will dispose of all strong liquor and permit only approximately 15 per cent of the pollution to escape in very dilute wash waters. This compares favorably with the approximately 75 per cent overall efficiency in pollution reduction as reported practical in the Howard process as followed at Marathon, Wisconsin, and, furthermore, the Johnsonburg process gives promise of being quite dependable in its operation.

The wastes from soda pulp mills, of which there are six in Pennsylvania, are high in pollution value but it appears to be quite practicable to reclaim chemicals by different methods and to remove lime sludge by simple sedimentation. Long time impoundment in very large lagoons is practiced with distinct success. Modernization of processes and the adoption of logical economies are said to be capable of materially reducing pollution from this source. However, further improvement in treating soda pulp wastes must be developed.

De-inking and Digester Waste

Another important waste is that from de-inking which has a population equivalent variously measured between 300 and 1100 per ton of pulp produced. Experiments in chemical coagulation have not proved successful and it is possible that biological secondary treatment, after reduction of causticity, may be resorted to for the solution of this troublesome problem. A large mill at Johnsonburg is now providing for at least 30 day storage of its de-inking wastes in a large hilltop reservoir followed by a cascade discharge about 1½ miles down a steep valley. Experiments indicate that sedimentation and aeration in storage will reduce the pollution load at least 50 per cent and the cascade aeration should add somewhat to the effectiveness of this treatment.

Rag or rope digester wastes are a problem at four Pennsylvania mills. Lagooning and absorption into the soil are at least temporarily successful at three of these mills but since experiments with neutralization and sedimentation have not proved sufficiently successful for permanent treatment there is urgent need for a practical method to be adopted when existing limited evaporation and absorption areas are exhausted.

Other special problems in handling mill wastes must be attacked vigorously by the industry, as well as prefecting and applying the known practical methods. The reasonable demands of the public for reducing the pollution of public waters must be met. Government is awake to these demands and can not disregard them.

Control by States

An example of the application of modern principles of pollution control is the new operative agreement of the Interstate Commission on the Delaware River Basin in which New York, New Jersey, Pennsylvania and Delaware establish zones of the river and pledge that they will regulate pollution thereof within the limitations fixed by definite formula for each zone. Most significant are the standards of permissible discharge to Zone I which extends from the headwaters to Trenton, New Jersey. These require, among other things, that the effluent shall be practically free of suspended solids and sufficiently free of turbidity that it will not cause noticeable turbidity in the river, that it shall have removed from it at least 85 per cent of organic substances as measured by b.o.d. and that it shall in no case exceed a b.o.d. of 50 parts per million. Who will deny the urgency of earnest study of industrial waste pollution problems so they may be solved effectively and economically?

Literature Cited

(1) Warrick, L. F., and McKee, F. J., *Paper Trade J.* 107, No. 23: 37-40; T.S. 259-262 (Dec. 8, 1938).

Review Of Paper Industry Literature

Copies of United States Patents can be obtained from the United States Patent Office, Washington, D. C. for 10 cents each. Send currency, not stamps.

Sulphite Process

Effect of Maximum Digestion Temperature in Pulping Western Hemlock of Four Growth Types by the Sulphite Process. J. N. McGovern and C. H. Chidester. Paper Trade J. 106, No. 22: 39-42 (June 2, 1938).—Increasing the maximum pulping temperature from 130 degs. to 150 degs. C., in the production of easy-bleaching pulps of equivalent bleach requirement from western hemlock of four growth types resulted in an average reduction in yield of 0.5 per cent for each 10 degs. C., increase. The decrease in yield was accompanied by relatively small decreases in bursting- and tensile-strength factors, especially when the temperature was raised from 140 degs. to 150 degs. C.

Lining of Sulphite Digesters. S. Ya. Tumanov. Bumazhnaya Prom. 6, no. 4:13-17 (1938); C. A. 32: 7261.—The technical progress made in the Soviet Union in the art of ceramic lining of pulp digesters is discussed. Directions for the operation are given.—C.J.W.

Results Obtained by Direct Cooking of Sulphite Pulp with Forced Circulation, system Lurgi. Ture Lehto. Finnish Paper and Timber J. 20, no. 5:575-576, 578-580, 582 (Aug. 15, 1938); B. I. P. C. 9:65.—After a brief description of the system, the author summarizes its advantages as follows. A more uniform pulp with regard to cooking degree and strength properties is obtained; the latter show also higher values. The circulation of the gas results in a uniform composition of the liquor in all parts of the digester and in a somewhat higher sulphur dioxide content during the entire cooking process. It is possible to cook wet wood by this method, in a comparatively short time.—C.J.W.

Decay in Sulphite Pulpwood and its Influence Upon the Manufacturing Processes and Pulp Yield. Th. Wegelius. Finnish Paper and Timber J. 20, no. 5A:125-126, 128-130; no. 15:594, 596-598, 600 (Aug. 15-16, Aug. 15, 1938); B. I. P. C. 9:89.—The author reviews the more common fungi attacking pulpwood, their origin, and some of the previous studies dealing with this subject. He then discusses the results of his own investigations made with wood infected by *Stereum sanguinulentum* to 4 different stages, namely green wood, which had just been infected, noticeably infected wood, but still of firm consistence, infected wood which had started to soften, and badly infected and decayed wood. The anatomical properties of the fibers were the same in all samples, while the physical properties differed a good deal with regard to moisture content, dry volume weight, and resistance to crushing. The *Stereum* fungus first attacks the hemicellulose in the wood and, after this is consumed, the actual cellulose. The percentage of lignin increases as the fungus attack advances. Cooking experiments which the author carried out confirmed the assumption that an increase in decay causes a shortening of the cooking period and a decrease in yield. The cooked pulp samples were defibered in a wet disintegrator and beaten in a Lampen mill to about 50 degs. S.R. The beating period does not show any relationship to the fungus decay. Sample sheets were formed and tested for their strength properties. The values clearly indicate the damaging influence of the decay. A quality of pulp similar to that from sound wood could be obtained when the cooking time of decayed wood was decreased. Sorting decayed from sound wood prior to cooking would therefore offer advantages, but practically is not feasible. When both qualities are cooked together an overcooking of the decayed wood is the obvious result. Great care should be exercised in buying wood; storage conditions should be improved to limit loss from decay to a minimum.—C.J.W.

Sulphite Waste Liquors

The Influence of Sulphite Pulping Conditions on the Properties of Spent Liquor. M. F. Martynov and G. N. Konopatskii. Tsentral. Nauch.-Issledovatel. Inst. Bumazh. Prom. Materialy 1937, No. 25: 21-55; C. A. 32:8135.—From the examination of 54 specimens of spent sulphite liquor and 10 intermediate liquors, obtained from seven different mills, it is concluded that the sugar formation in the liquor is influenced by the thermal conditions of the cooking and very little, if at all, by the acid strength within the limits of 3-5 per cent sulphur dioxide and 0.9-1 per cent of calcium oxide. The sugar content increases in the initial stages of pulping and then gradually decreases at higher temperatures and prolonged cooking. Thus, the optimum sugar content in the liquor is determined by the thermal balance of the temperature and duration of cooking and not be the degree of pulp hardness as is commonly thought. In no case did the production of mild cellulose show increased sugar content in the liquor. The content of sugar is decreased by the action of polythionates, inorganic matter (ash content) and by the discharge of liquor. The optimum conditions of pulping, affording a liquor with maximum sugar content suitable for alcoholic fermentation, are being investigated.—C.J.W.

Biological Protein Synthesis. Herman Fink. Angew. Chem. 51, no. 28:475-481 (July 16, 1938); B. I. P. C. 9:44.—The author reviews the present status of synthetic processes for preparing fodder yeast from wood sugar, sulphite waste liquor, and potatoes. The experiments are still being continued, especially with regard to feeding results. Brief reference is made to the synthesis of proteins from simple carbon compounds, such as acetaldehyde, acetic acid, alcohol, pyroracemic acid, etc. While technically possible, the high price of these products cannot yet compete successfully with the market price of the natural products.—C.J.W.

Production of Magnesite Brick with a Binding of Sulphite Cellulose Lyes. A. Drazhnikova. Ogneupory 6:1089-1095 (1938); C. A. 32:6819.—Brick made with a sulphite cellulose lye binder instead of a mass matured by storage is proved of better quality.—C.J.W.

The Isolation of Guaiacol from Sulphite Waste Liquor. Frank Léger and Harold Hibbert. Can. J. Research 16B: 68 (1938).—Sulphite waste liquor

was autoclaved with sodium hydroxide; the reaction mixture was extracted with benzene; after crystallizing out the vanillin, the solvent was evaporated leaving a dark viscous oil, which was fractionated under vacuum. The first fraction, boiling from 56 degs. to 86 degs. C., under a pressure of 5.2 to 1.0 mm. of mercury, was identified as guaiacol by means of its *p*-nitrobenzoate and *p*-toluene sulphonate.—A.P.-C.

Chemistry of Cooking. Reactions of Aniline with Lignin Sulphonic Acid of Waste Liquor. J. Seiberlich. Pulp Paper Mag. Can. 39: 625-626 (Aug. 1938).—On shaking sulphite waste liquor with aniline, the latter combines with free lignin sulphonic acid to form a red precipitate that is soluble in water. On adding hydrochloric acid to the liquor after treatment with aniline, a further amount of red precipitate is formed owing to liberation of further amounts of ligninsulphonic acid. The reaction seems to take place in the amino group of aniline, indicating a simple formation of salt, the same precipitate being obtained with *p*-toluidine but not with dimethylaniline because in the latter the two hydrogens of the amino group are substituted by methyl groups. The precipitate produced by treating sulphite waste liquor with aniline forms a more or less consistent paste; by mixing in 10 per cent (on the wet weight of the precipitate) of formaldehyde, the residue hardens in about 30 sec., probably forming a formaldehyde resin. The latter can be powdered, and after mixing with fillers and curing at about 130 degs. C., under pressure, forms a dark brown solid plastic material.—A.P.-C.

Adhesive from Sulphite Waste Liquor. Karl B. Winlöf. U. S. pat. 2,116,227 (May 3, 1938).—A product suitable for use with paper or pasteboard is obtained by concentrating under high vacuum the hot waste liquor directly as it comes from the digester but liberated from solid particles. Concentration is carried out in the absence of light and air and at a temperature of about 60 degs. to 70 degs. C., until the product has a specific gravity of 1.4. A corresponding amount of water is added and alternate concentration to a specific gravity of 1.4 and addition of water are alternated repeatedly. Finally, there is added such a limited amount of sulphuric acid that precipitation of calcium salts is avoided. (C1-134-23.91).—A.P.-C.

Sulphite Waste Liquor Treatment. Norsk Hydro-Elektrisk Kvaelstofaktieselskab. Fr. pat. 823,778 (Jan. 26, 1938).—Waste liquor containing 40 per cent, or preferably 50 per cent to 60 per cent, solids is converted to a solid or very viscous product by heating it under pressure to about 150 degs. C. The product is then dried in the air. The sulphur dioxide and ammonia may be recovered by heating to 600 degs. to 800 degs. C.—A.P.-C.

Miscellaneous Digesting Processes

Production of Cellulose. F. Offermanns. Brit. pat. 473,708 (June 11, 1936).—Disintegrated cellulosic material is subjected to pressure, soaked at 6 to 12 atmospheres in an acid or alkaline liquor at 150 degs. to 220 degs. C., ground to pulp under pressure, and forced through a pipe into screw presses or washing vessels.—A.P.-C.

Production of Pulp from Highly Resinous Woods. R. Niethammer and K. Schwabe. Brit, pat. 483,964 (Sept. 20, 1937).—In producing groundwood from pine, water-soluble barium salts are added to the pulp during or after grinding. The quantities added are 0.1 to 1 kilo per cu. m. of wood. The pH of the slush pulp should be maintained at not more than 7. It is claimed that pitch troubles on the paper machine are thus prevented.—A.P.-C.

The Disintegration of Vegetable Fibrous Materials with Polyhydroxy Alcohols. H. Erbring and H. Geinitz. Kolloid-Z. 84, no. 2:215-222 (Aug., 1938). B. I. P. C. 9:62.—Straw, broom, reeds, potato plants, etc., are disintegrated by laboratory treatment with glycerol or glycol at elevated temperatures and pressures. Organic acids, such as formic or acetic acids, accelerate the process which may, however, proceed with the natural acidity of the raw materials. The lignin and incrusting substances are removed so that slight mechanical agitation suffices to give separate fibers. Even 1:1 mixtures of water with the alcohols are effective. Analytical data are given for the properties of a 50 per cent yield of straw pulp that could be bleached and made into paper.—C.J.W.

Production of Cellulose from Wood. Theodor Kleinert. Brit. pat. 481,631 (March 15, 1938).—The materials are subjected to a treatment with steam and oxygen or air, for a more easy solubilization of the lignin and incrustants. This is followed by treatment with the usual disintegrating or solvent agents.—A.P.-C.

Production of Wood Pulp. Kübler & Niethammer and Chem. Fab. Coswig-Anhalt G.m.b.H. Fr. pat. 826,079 (March 22, 1938).—The manufacture of pulp from resinous wod, e.g., pine wood, is facilitated by adding a water-soluble compound of barium, e.g., barium hydroxide, preferably in such a proportion that the mixture does not become alkaline. Alternatively, the wood may be digested with an alkali solution and the pulp then treated with a water-soluble compound of barium, which may be formed *in situ*, e.g., from barium carbonate.—A.P.-C.

Production of Cellulose. Società Anon. Manifacttura di Altessano. Fr. pat. 825,545 (March 4, 1938).—Cellulose of a high degree of purity suitable for making explosives and rayon is made from stalks and leaves of annual plants, particularly common reeds *(Arundo donax)*, and agricultural waste such as maize, by a process involving five different treatments: (1) acid, (2) basic, (3) oxidizing in an acid medium, (4) basic, and (5) oxidizing in an alkaline medium. The first two are carried out in presence of substances which preserve the cellulose from injurious secondary reactions, e.g., sugars with five to six carbon atoms.—A.P.-C.

Process for the Production of Beech Pulp. A. G. fuer Halbzellstoff-Industrie. Fr. pat. 830,048 (Nov. 27, 1937).—The wood is disintegrated into chips about 10 to 15 mm. long and 5 to 10 mm. thick, treated at a temperature below 100 degs. C., with 3 to 5 times its weight of water and up to 5 per cent (on the weight of the wood) of quicklime, separated from the liquid, and subjected to sulphite cooking with a liquor containing 3 to 5 per cent of total sulphur dioxide and 0.8 to 1.2 per cent of lime.—A.P.-C.

Beating

Beating the Sulphate Pulp in the Jordan for the Production of Bag Paper. M. B. Karasik and B. B. Bukaty. Tsentral. Nauch.-Issledovatel Inst. Bumazh. Prom. Materialy 1937, no. 25:57-72; C. A. 32: 8137.—Beating of sulphate pulp with five per cent lignin content in the jordan at three per cent concentration by multiple circulation for seven minutes results in superior bag paper and a saving of 39 per cent energy as compared with beating in the hollander beater.—C.J.W.

Imports of Paper and Paper Stock

Giving Manifests of New York, Boston, Philadelphia and Other Ports of Newsprint, Wrapping, Writing, Coated, Blotting, Tissue, Strawboard, Wallboard, Cigarette Papers, Sulphite, Kraft and Ground Wood Pulp.

NEW YORK IMPORTS

WEEK ENDING AUGUST 5, 1939

SUMMARY

Cigarette paper....196 cs.
Wall paper....4 cs.
Paper hangings....1 ble., 1 cs.
Painted paper....1 cs.
Wall board....775 bdls.
Newsprint....12,541 rolls
Printing paper....196 rolls, 40 bls., 10 cs.
Wrapping paper....282 rolls
Packing paper....100 bls.
Filter paper....6 cs.
Tracing cloth....40 cs.
Surface coated paper....111 cs.
Basic paper....4 cs.
Marble paper....1 cs.
Decalcomania paper....2 cs.
Decalcomanias....6 cs.
Parchment paper....81 cs.
Tissue paper....42 bbls., 21 cs.
Writing paper....15 cs.
Colored paper....10 cs
Glass paper....1 cs.
Receipt paper....182 rolls
Paper tubes....52 ctns., 50 cs.
Miscellaneous paper....54 cs.

CIGARETTE PAPER

De Mauduit Paper Corp., *Schodack,* Havre, 194 cs.
De Mauduit Paper Corp., *Normandie,* Havre, 2 cs.

WALL PAPER

——, *Aquitania,* Southampton, 3 cs.
A. F. Stauff Co., *Hansa,* Hamburg, 1 cs.

PAPER HANGINGS

A. Lubatty, *Aquitania,* Southampton, 1 ble.
W. H. S. Lloyd & Co., Inc., *American Farmer,* London, 1 cs.

PAINTED PAPER

——, *Normandie,* Havre, 1 cs.

WALL BOARD

A. H. Morner, *Braheholm,* Fagervik, 187 bdls.
Treetex Corp., *Braheholm,* Kopmanholmen, 588 bdls.

NEWSPRINT

Jay Madden Corp., *Southfolk,* Kotka, 495 rolls.
——, *Pres. Harding,* Norway, 436 rolls.
Jay Madden Corp., *Pres. Harding,* Finland, 299 rolls.
News Syndicate Co., Inc., *Brand,* Comeau Bay, 7223 rolls.
H. G. Craig Co., Inc., *Kermic,* Donnacona, 343 rolls.
Jay Madden Corp., *Scanyork,* Kotka, 525 rolls.
Lunham & Reeve, Inc., *Scanyork,* Kotka, 214 rolls.
International Paper Co., *International No. 1,* Gatineau, 348 rolls.
Jay Madden Corp., *Carolina Thorden,* Kotka, 567 rolls.
Lunham & Reeve, Inc., *Carolina Thorden,* Kotka, 414 rolls.
H. Reeve Angel & Co., Inc., *Carolina Thorden,* Kotka 456 rolls.
——, *Washington,* Oslo, 204 rolls.
Jay Madden Corp., *Washington,* Finland, 389 rolls.
H. G. Craig Co., Inc., *G. D. D.,* Donnacona, 310 rolls.
Jay Madden Corp., *Hansa,* Finland, 318 rolls.

PRINTING PAPER

F. C. Strype, *Zaandam,* Rotterdam, 96 rolls, 5 cs.
N. Y. World's Fair, *E. Francqui,* Antwerp, 5 cs.
Jay Madden Corp., *Washington,* Finland, 40 bls., 100 rolls.

WRAPPING PAPER

Jay Madden Corp., *Black Falcon,* Finland, 282 rolls.

PACKING PAPER

J. P. Heffernan Paper Co., *Pres. Polk,* Genoa, 100 bls.

FILTER PAPER

H. Reeve Angel & Co., Inc., *Georgic,* London, 6 cs.

TRACING CLOTH

E. Dietzgen & Co., *Laconia,* Liverpool, 15 cs.
Keuffel & Esser Co., *Laconia,* Liverpool, 13 cs.
M. J. Corbett & Co., *Pres. Harding,* Hamburg, 12 cs.

SURFACE COATED PAPER

Gevaert Co. of America, *Pennland,* Antwerp, 111 cs.

BASIC PAPER

Globe Shipping Co., *Hansa,* Bremen, 4 cs.

MARBLE PAPER

Tamm & Co., *E. Francqui,* Antwerp, 1 cs.

DECALCOMANIA PAPER

B. F. Drakenfeld & Co., *Laconia,* Liverpool, 2 cs., (duplex).

DECALCOMANIAS

General Motors Overseas Corp., *Hansa,* Hamburg, 6 cs.

PARCHMENT PAPER

A. Dietzgen & Co., *Hansa,* Hamburg, 81 cs., (imitation).

TISSUE PAPER

D. C. Andrews & Co., *Georgic,* London, 1 cs.
F. C. Strype, *Laconia,* Liverpool, 20 cs.
Jay Madden Corp., *Scanyork,* Kotka, 42 bbls.

WRITING PAPER

——, *Laura C.,* Ancona, 7 cs.
Penson & Co., *Georgic,* Southampton, 1 cs.
——, *Normandie,* Havre, 7 cs.

COLORED PAPER

Long Sang Ti Co., Inc., *Tai Shan,* Hong Kong, 10 cs.

GLASS PAPER

T. D. Downing & Co., *Aquitania,* Southampton, 1 cs.

RECEIPT PAPER

National Cash Register Co., *Batory,* Copenhagen, 182 rolls.

PAPER TUBES

——, *Hansa,* Bremen, 52 ctns., 50 cs.

MISCELLANEOUS PAPER

Japan Paper Co., *Atutasan Maru,* Kobe 23 cs.
Corn Exchange Bank Trust Co., *Atutasan Maru,* Kobe, 6 cs.
Remington Rand, Inc., *Atutasan Maru,* Kobe, 20 cs.
——, *Normandie,* Havre, 3 cs.
Cartier, Inc., *Normandie,* Havre, 1 cs.
Heemsoth Kerner Corp., *Aquitania,* Southampton, 1 cs.

RAGS, BAGGING, ETC.

E. J. Keller Co., Inc., *Schodack,* ——, 127 bls. rags.
Fort Dupee Sawyer Co., *Schodack,* Havre, 12 bls. rags.
——, *Schodack,* Havre, 58 bls. rags.
W. J. Green Co., *Schodack,* Havre, 22 bls. rags.
Castle & Overton, Inc., *Schodack,* Havre, 41 bls. rags.
Loumar Textile By-Products, *Schodack,* Dunkirk, 116 bls. bagging.
Richard Shipping Co., *Schodack,* Dunkirk, 26 bls. rags.
Castle & Overton, Inc., *Santos,* Buenos Aires, 68 bls. paper stock.
——, *Laura C.,* Algiers, 109 bls. rags.
Chase National Bank, *Helvig,* Rotterdam, 60 bls. bagging.
American Express Co., *Laconia,* Liverpool, 8 bls. rags.
Chase National Bank, *Laconia,* Liverpool, 33 bls. bagging.
——, *West Cusseta,* Dundee, 458 bls. paper stock.
Castle & Overton, Inc., *West Cusseta,* Dundee, 73 bls. paper stock.
Continental Bank Trust Co., *West Cusseta,* Dundee, 81 bls. paper stock.
Irving Trust Co., *Examiner,* Alexandria, 59 bls. rags.
Castle & Overton, Inc., *Helgoland,* Buenos Aires, 125 bls. rags.
Spaulding Fibre Co., *Black Falcon,* Rotterdam, 308 bls. rags.
Chase National Bank, *Black Falcon,* Rotterdam, 202 bls. bagging.
D. S. Stern Corp., *Pres. Polk,* Bombay, 100 bls. cotton waste.

——, *Pres. Polk*, Bombay, 100 bls. cotton waste.
E. J. Keller Co., Inc., *Washington*, ——, 247 bls. rags.
Atlas Waste Manfg. Co., *Neptuno*, Havana, 61 bls. cotton waste.

GLUE STOCK

Darmstadt Scott & Courtney, *Zaandam*, Rotterdam, 286 bls.

OLD ROPE

D. Benedetto, Inc., *Schodack*, Dunkirk, 206 coils.
W. Steck & Co., *Helvig*, London, 60 coils.
E. J. Keller Co., Inc., *Zaandam*, ——, 92 coils.
Irving Trust Co., *Pennland*, Antwerp, 59 coils.
National City Bank, *American Farmer*, London, 95 coils.
G. W. Millar & Co., Inc., *Black Falcon*, Rotterdam, 56 coils.

CASEIN

National City Bank, *Eastern Prince*, Buenos Aires, 419 bags.
American Cyanamid & Chem. Co., *Eastern Prince*, Buenos Aires, 834 bags.

WOOD PULP

Bulkley Dunton Pulp Co., Inc., *Southfolk*, ——, 720 bls. dry sulphite, 121 tons.
Pulp Sales Corp., *Southfolk*, Kotka, 750 bls. sulphate, 150 tons; 125 bls. bleached sulphate, 25 tons.
Price & Pierce, Ltd., *Braheholm*, ——, 300 bls. unbleached sulphite.
Stora Kopparberg Corp., *Braheholm*, Gefle, 690 bls. dry wood pulp.
Tradesmans Natl. Bank Trust Co., *Braheholm*, Norrsundet, 125 bls. dry sulphate.
Perkins Goodwin & Co., *Braheholm*, Fagervik, 180 bls. dry sulphate, 150 bls. dry sulphite.
Pagel Horton & Co., Inc., *Braheholm*, Sikea, 4800 bls. dry sulphite.
——, *Braheholm*, Iggesund, 900 bls. unbleached sulphite.
Bulkley Dunton Pulp Co., Inc., *Scanyork*, ——, 1110 bls. dry sulphite, 187 tons.
Pulp Sales Corp., *Scanyork*, Wiborg, 2531 bls. sulphate, 432 tons; 758 bls. sulphite, 142 tons; 350 bls. mechanical pulp, 68 tons.
Beaverite Products, Inc., *Hansa*, Hamburg, 113 bls. wood pulp, 25 tons.

WOOD PULP BOARDS

——, *Scanyork*, Wiborg, 76 bls., 18 tons.
Jay Madden Corp., *Scanyork*, Kotka, 8 rolls, 2 tons.
Jay Madden Corp., *Carolina Thorden*, Kotka, 339 bls. 75 ctns., 47 rolls.

NEWARK IMPORTS

WEEK ENDING AUGUST 5, 1939

Pulp Sales Corp., *Southfolk*, Wiborg, 10310 bls. sulphite, 1924 tons.

ALBANY IMPORTS

WEEK ENDING AUGUST 5, 1939

Gottesman & Co., Inc., *Braheholm*, Gefle, 2000 bls. dry sulphite.
Gottesman & Co., Inc., *Braheholm*, Fagervik, 2340 bls. dry sulphite.
——, *Braheholm*, Wallvik, 2400 bls. dry sulphite, 250 bls. dry mechanical pulp.
Bulkley Dunton Pulp Co., Inc., *Braheholm*, ——, 2125 bls. dry sulphite.
Pagel Horton & Co., Inc., *Braheholm*, Gefle, 9075 bls. dry sulphite, 1500 bls. dry sulphate.
Tradesmans Natl. Bank Trust Co., *Braheholm*, Gefle, 4125 bls. dry sulphate.
Perkins Goodwin & Co., *Braheholm*, Fagervik, 1200 bls. dry sulphite.
A. H. Morner, *Braheholm*, Fagervik, 202 bdls. wall board.
Pagel Horton & Co., Inc., *Braheholm*, Sikea, 3150 bls. dry sulphite.
Pagel Horton & Co., Inc., *Braheholm*, Kopmanholman, 306 bls. dry sulphite.
——, *Braheholm*, Kopmanholman, 1200 bls. chemical pulp, 484 bdls. wall board.
——, *Braheholm*, Iggesund, 250 bls. unbleached sulphite, 625 bls. sulphite, 250 bls. sulphate.
Pagel Horton & Co., Inc., *Braheholm*, Sweden, 1394 bls. wood pulp.
International Paper Co., *Frank Seamans*, Dalhousie, 330 cords pulpwood.

PORTLAND IMPORTS

WEEK ENDING AUGUST 5, 1939

Gottesman & Co., Inc., *Svaneholm*, Sweden, 390 bls. wood pulp.
Pagel Horton & Co., Inc., *Korsholm*, Sweden, 500 bls. wood pulp.
Price & Pierce, Ltd., *Hjelmaren*, ——, 330 bls. bleached sulphite.

BOSTON IMPORTS

WEEK ENDING AUGUST 5, 1939

——, *Schodack*, Havre, 84 bls. cotton waste.
——, *Schodack*, Dunkirk, 32 bls. rags.
——, *West Cusseta*, Dundee, 24 bls. paper stock.
Elliott Addressing Machine Co., *Tai Shan*, Yokohama, 4 cs. paper.

PHILADELPHIA IMPORTS

WEEK ENDING AUGUST 5, 1939

Castle & Overton, Inc., *Schodack*, Havre, 299 bls. rags.
E. J. Keller Co., Inc., *Schodack*, ——, 182 bls. rags, 107 bls. bagging.
Public Ledger, Inc., *Southfolk*, Kotka, 564 rolls newsprint.
Darmstadt Scott & Courtney, *Helvig*, Antwerp, 68 bls. bagging.
——, *Helvig*, Antwerp, 65 bls. rags.
F. Weber & Co., *West Cusseta*, London, 4 cs. drawing paper, 1 cs. card board.
——, *West Cusseta*, Hamburg, 159 rolls wrapping paper.
J. Wallworth & Sons, Inc., *West Cusseta*, Dundee, 38 bls. paper stock.
——, *West Cusseta*, Dundee, 86 bls. paper stock.
Castle & Overton, Inc., *Examiner*, Alexandria, 491 bls. rags.
Philadelphia National Bank, *Examiner*, Alexandria, 3 bls. bagging.
E. J. Keller Co., Inc., *Examiner*, ——, 418 bls. rags.
Price & Pierce, Ltd., *Scanyork*, Stockholm, 180 bls. dry sulphite, 30 tons.
Public Ledger, Inc., *Scanyork*, Kotka, 568 rolls newsprint.
Wilkinson Bros., & Co., Inc., *Scanyork*, Kotka, 124 rolls newsprint.
J. W. Hampton, Jr., & Co., *Scanyork*, Kotka, 83 rolls newsprint.
Jay Madden Corp., *Carolina Thorden*, Kotka, 373 rolls, 429 bls. wood pulp boards.
——, *Montreal City*, Bristol, 47 coils old rope.
Price & Pierce, Ltd., *Scanstates*, ——, 120 bls. bleached sulphite.

BALTIMORE IMPORTS

WEEK ENDING AUGUST 5, 1939

Congoleum Nairn Co., *Schodack*, Havre, 494 bls. rags.
W. H. Masson, Inc., *West Cusseta*, London, 10 bls. printing paper.
American Express Co., *Black Falcon*, Antwerp, 4 cs. stencil paper.
Price & Pierce, Ltd., *Scanyork*, Stockholm, 210 bls. dry sulphite, 35 tons.
Pulp Sales Corp., *Scanyork*, Helsingfors, 520 bls. mechanically ground pulp, 104 tons; 80 bls. sulphate, 12 tons.
Pulp Sales Corp., *Scanyork*, Wiborg, 661 bls. sulphate, 128 tons; 213 bls. sulphite, 35 tons.
Pulp Sales Corp., *Carolina Thorden*, Kotka, 938 bls. mechanically ground pulp.
Price & Pierce, Ltd., *Schwanheim*, ——, 900 bls. unbleached sulphate, 1620 bls. unbleached sulphite.
Price & Pierce, Ltd., *Scanstates*, ——, 210 bls. bleached sulphite.

NORFOLK IMPORTS

WEEK ENDING AUGUST 5, 1939

Champagne Paper Corp., *Schodack*, Havre, 212 cs. cigarette paper.
——, *West Cusseta*, Hamburg, 20 rolls wrapping paper.
Paper Makers Importing Co., *Montreal City*, Bristol, 70 tons china clay.
Price & Pierce, Ltd., *Schwanheim*, ——, 3870 bls. unbleached sulphite.

NEWPORT NEWS IMPORTS

WEEK ENDING AUGUST 5, 1939

De Mauduit Paper Corp., *Schodack*, Havre, 726 cs. cigarette paper.

DETROIT IMPORTS

WEEK ENDING AUGUST 5, 1939

Pagel Horton & Co., Inc., *Ravnefjell*, Norway, 336 rolls newsprint.

CHICAGO IMPORTS

WEEK ENDING AUGUST 5, 1939

Pagel Horton & Co., Inc., *Ravnefjell*, Norway, 50 rolls newsprint.
Pagel Horton & Co., Inc., *Gudrid*, Sweden, 3000 bls. wood pulp.

New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday, August 9, 1939.

As general business activity continues to slowly rise, reports from many manufacturers' representatives, jobbers, and general paper merchants, indicate that the volume of sales in practically all grades of paper continues to slowly increase. The index of general business activity for the week ended July 29 rose to 91.2 per cent, from 90.4 per cent for the previous week, compared with 81.6 per cent for the corresponding week last year.

Production of paper as indicated by the estimated output of 197 mills was estimated at 80.1 per cent for the week ended July 29, compared with 77.1 per cent for the corresponding week last year. Paper board production remained at the same figure as for the previous week at 70.0 per cent, compared with 64.0 per cent for the corresponding period last year.

The newsprint market is little changed from last week. No important increase in consumption has been reported at this date, and the increase this year over last year is under 5 per cent. The fall budgets for newspaper advertising thus far made public, indicate an encouraging increase in advertising linage in the future. The longer view of the newsprint market is thereby much improved. Prices are unchanged at prevailing representative market quotations.

A little improvement in the sales volume of some grades of paper is indicated in reports received this week, mainly in the sulphite bond and kraft grades.

Sales of folding boxes reflect a 3 per cent gain in July, after the decline of 20 per cent in April from March, compared with a normal season drop of 16 per cent. A large factor in the increased sales is attributed to the early purchasing of holiday boxes. Orders booked by members of the Folding Paper Box Association of America, for the first seven months of this year, are estimated at 7.8 per cent above last year. The early promotional activity of the association in cooperation with the United States Department of Commerce, dealing with "folding paper boxes, an aid to profitable packaging", and written by James D. Studley, chief of the pulp and paper section, forest products division, evidently has proven successful at this early date.

Mechanical Pulp

No important change in the mechanical pulp market has been reported this week. Consumption continues at about the same level as for the preceding week. Prices continue unchanged.

Chemical Pulp

The market situation in chemical pulp continues unchanged from that prevailing last week. Quotations on all standard grades of domestic and imported pulps are unchanged. The price situation is a little confused by the comparative firmness and weakness in various grades. The best grades of unbleached sulphite continue to be reported as firm, with bleached sulphite less firm, and kraft pulp relatively weak.

Old Rope and Bagging

Mill buying of old rope is reported as slow and while some quarters of the trade report that the supply of old Manila rope is very limited, demand is insufficient to change the current price level. No important change has been reported in prices or demand on any grade of old bagging, excepting the No. 3 or roofing grade, which is quite active. All prices are unchanged from last week.

Rags

White and bleached grades of new domestic rags continue firm and demand is reported as good for the current week. Other grades, excepting roofing rags which are firm, are weak. Prices on all grades are unchanged and conform to prevailing representative market quotations.

Old Waste Paper

The old waste paper market is very firm with recent advances in several grades. Corrugated is currently quoted from .45 to .47½, and solid flat book has advanced to .60 to .65. Quotations in this market on No. 1 mixed paper are unchanged from last week and this grade is currently quoted at from .17½ to .22½ cents.

Twine

No important change in demand has been reported this week in any grade of twine. Prices remain relatively firm on all grades of hard fiber twines and are unchanged at prevailing market quotations.

Philadelphia Association Moves

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., August 7, 1939—Announcement was made today at the Board of Governors' meeting of the Philadelphia Paper Trade Association of the removal of the office from its former headquarters in Room 355 Drexel Building to Room 629 Drexel Building. It is suggested that the members of the trade direct their inquiries on office questions to Miss B. Loughlin, who is acting as secretary of the Association. The new telephones are Bell: Lombard 9552, Keystone: Main 8852. In conjunction with the office there will also be a meeting room which will be available for reservation for the larger divisional meetings of the Association.

Frederick E. Macy, formerly general manager of A. M. Collins Manufacturing Company, was elected president at a recent meeting of the Board of Directors. Previous to his present connections with A. M. Collins Manufacturing Company, Mr. Macy was associated with Dill & Collins. Other officers elected are: Stuart D. Armour, vice president; Thomas W. Smith, secretary, and W. O. Fitzgerald, treasurer.

Miscellaneous Markets

Office of the PAPER TRADE JOURNAL
Wednesday, August 9, 1939.

BLANC FIXE—Prices on blanc fixe continue firm and unchanged at prevailing market quotations. The pulp is quoted at from $42.50 to $45 per ton, in bulk; the powder is offered at from 3½ to 3¾ cents per pound, in barrels, at works.

BLEACHING POWDER—Quotations on bleaching powder remain firm and conform to prevailing market prices. Bleaching powder is quoted at from $2 to $2.25 per 100 pounds, in drums, at works.

CASEIN—The demand for casein is reported as continuing good, with prices unchanged from quotations of last week. Standard domestic casein, 20-30 mesh, is current quoted at from 11 to 11½ cents per pound; 80-100 mesh, at from 11½ to 12 cents per pound; all prices in bags, car lot quantities.

CAUSTIC SODA—Prices on caustic soda continue firm and unchanged at prevailing market quotations. Solid caustic soda is quoted at from $2.10 to $2.30 per 100 pounds; flake and ground at from $2.50 to $2.70 per 100 pounds, in drums, at works.

CHINA CLAY—Quotations on china clay continue firm and remain unchanged at prevailing market levels. Domestic filler clay is quoted at from $6.50 to $12 per ton; filler clay at from $11 to $12 per ton; coating clay at from $11 to $22 per ton, at mines. Imported clay is offered at from $13 to $25 per ton, ship side.

CHLORINE—Prices on chlorine continue firm and conform to prevailing market quotations. Chlorine is currently quoted at $1.75 per 100 pounds, in single-unit tank cars, f.o.b., works.

ROSIN—The rosin market is currently reported as firm. Prices on some grades are a little lower at this date. "G" gum rosin is quoted at $4.75; "FF" rosin at $4.65, per 280 pounds, gross weight, in barrels, at Savannah. Seventy per cent gum rosin size is quoted at $2.68 per 100 pounds, f.o.b. shipping point.

SALT CAKE—Prices on salt cake continue firm and are reported unchanged at prevailing market quotations. Prices range at from $12 to $13.50 per ton; chrome salt cake at from $11 to $22 per ton, f.o.b., shipping point. Imported salt cake is quoted at from $14.50 to $15 per ton, Gulf or Atlantic Seaboard, on dock.

SODA ASH—Quotations on soda ash continue firm and unchanged at prevailing market levels. Prices on soda ash in car lots, at works, per 100 pounds, are as follows; in bulk, $.90; in bags, $1.05; and in barrels, $1.35.

STARCH—The demand for corn starch is reported as continuing good, Prices are a little lower for the current week. Globe pearl is currently quoted at $2.40 per 100 pounds; special paper starch is offered at $2.50 per 100 pounds. All prices in bags, car lot quantities, f.o.b., Chicago.

SULPHATE OF ALUMINA—Quotations on sulphate of alumina are unchanged at prevailing market levels. The commercial grades are offered at $1.15; iron free at $1.30 per 100 pounds, in bags, car lot quantities, f.o.b., works.

SULPHUR—Prices on sulphur continue firm and unchanged. Annual contracts are quoted at $15 per long ton, f.o.b., mines. Spot and nearby car lots are offered at $19 per ton.

TALC—Quotations on talc are unchanged and conform to prevailing market levels, with demand steady at this date. Domestic talc is currently quoted at from $15 to $18 per ton, Eastern mines. Imported talc is offered at from $20 to $40 per ton, on dock.

Market Quotations

Paper

(Delivered New York)

News, per ton—
Roll, contract....$50.00 @ —
Sheets .....58.00 @ —

Kraft—per cwt.—Delivered Zone A
No. 1 Northern....$4.75 @$5.25
Superstandard .... 4.12½ @ 4.62½
Northern Standard Wrapping ..... 4.00 @ —
Standard Wrapping 3.50 @ —

Tissues—Per Ream—Carlots
White No. 1.....$0.82½ @ —
White No. 1 M. G. .80 @ —
White No. 1½.... .67½ @ —
White No. 2..... .60 @ —
Anti-Tarnish M. G. .65 @ —
Colored ..... .77½ @ —
Kraft ..... .65 @ —
Manila ..... .60 @ —
Unbl. Toilet, 1 M... 2.65 @ —
Bleached Toilet.... 5.26 @ —

Paper Towels—Per Case
Unbleached, Jr.....$1.75 @ —
Bleached Jr..... 3.10 @ —

Manila—per cwt.—C. l. f. a.
No. 1 Jute..... 7.75 @ 9.75
No. 1 Manila Wrapping, 35 lb..... 5.00 @ —
No. 2 Manila Wrapping, 35 lb..... 4.75 @ —

Boards, per ton—
News .....30.00 @32.50
Chip .....30.00 @32.50
Sgl. Mla. Lt. Chip.42.50 @ —
Jute Lined Chip...42.50 @45.00
White Pat. Coated.55.00 @57.50
Kraft Liners.....45.00 @ —
Binders Boards....71.00 @77.00

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—
White, Assorted Items,
Delivered in Zone 1:

	Bonds	Ledgers
100% Rag Ext. No. 1.	$39.10@$46.00	$40.25@$47.25
100% Rag	31.05@ 36.50	32.20@ 37.75
85% Rag	.....	29.90@ 35.00
75% Rag	23.60@ 27.75	24.75@ 29.00
65% Rag	.....	21.65@ 26.25
50% Rag	17.55@ 21.50	18.70@ 22.75
25% Rag	14.65@ 17.75	15.80@ 19.25

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—
White, Assorted Items,
Delivered in Zone 1:

	Bonds	Ledgers
No. 1	$8.60@$10.50	$9.75@$12.00
No. 2	7.70@ 9.50	8.90@ 10.75
No. 3	6.75@ 8.25	7.90@ 10.00
No. 4	7.00@ 8.50	8.20@ 10.00

Colors $1.00 cwt. extra.

Free Sheet Book Papers—
White, Cased Paper,
Delivered in Zone 1:

No. 1 Glossy Coated	$11.30@$12.75
No. 2 Glossy Coated	9.70@ 11.00
No. 3 Glossy Coated	8.60@ 10.00
No. 4 Glossy Coated	8.05@ 9.25
No. 1 Antique (watermarked)	8.05@ 9.25
No. 2 Offset	7.45@ 8.50
A Grade E. F.	7.20@ 8.25
A Grade S. & S. C.	7.45@ 8.50
B Grade E. F.	6.65@ 7.75
B Grade S. & S. C.	6.90@ 8.00
C Grade E. F.	6.40@ 7.50
C Grade S. & S. C.	6.65@ 7.75
D Grade E. F.	6.10@ 7.00
D Grade S. & S. C.	6.35@ 7.25

Ivory & India at $.50 cwt. extra.

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—
Moist .....22.50 @24.00
Dry .....22.50 @24.00

(Delivered)

No. 1 Domestic and Canadian .....29.00 @33.00

Chemical Pulp

(On Dock, Atlantic, Gulf and West Coast Ports)

Bleached Sulphite (Domestic and Foreign)—
Prime Bleached Sulphite ..... 2.25 @ 2.75

Prime Qualities—
Easy-Bleaching Sulphite ..... 1.90 @ 2.00
Strong Unbleached Sulphite ..... 1.70 @ 2.00

(On Dock, Atlantic Ports)

Kraft Bleached..... 2.50 @ 2.75
Kraft Light & Strong 1.50 @ 1.60
Kraft No. 1..... 1.40 @ 1.50
Kraft No. 2..... 1.25 @ 1.30

(F. o. b. Pulp Mill)

Kraft Domestic..... 1.25 @ 1.75

(Delivered)

Soda Bleached..... 2.55 @ —

Add 60 cents per short ton, does charges for Albany; $2.50 for Lake Ports East and $3.50 for Lake Ports West of Mackinac Straits.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—
New White, No. 1 6.90 @ 7.00
Silesias No. 1..... 4.50 @ 4.75
New Unbleached... 6.75 @ 7.00
Blue Overall..... 4.90 @ 5.00
Fancy ..... 1.75 @ 2.00
Washables ..... 1.50 @ 1.60
Mixed Khaki Cuttings ..... 2.25 @ 2.50
O. D. Khaki Cuttings 3.25 @ 3.40

Old Rags

White, No. 1—
Repacked ..... 2.90 @ 3.15
Miscellaneous ..... 2.10 @ 2.25

White, No. 2—
Repacked ..... 1.50 @ 1.60
Miscellaneous .... 1.25 @ 1.40

Thirds and Blues—
Repacked ..... 1.30 @ 1.40
Miscellaneous ..... 1.15 @ 1.20

Roofing Rags—
No. 1..... .90 1.00
No. 2..... .67½ @ .77½
No. 3 (bagging).. .55 @ .65
No. 4..... .60 @ .65
No. 5A..... .60 @ .65

Foreign Rags

New Rags

New Dark Cuttings...2.25 @ 2.40
New Mixed Cuttings. 2.00 @ 2.20
New Light Silesias.. 5.50 @ 5.75
Light Flannelettes... 5.50 @ 5.75
New White Cuttings. 7.00 @ 7.50
New Light Oxford.. 4.00 @ 4.50
New Light Prints... 3.00 @ 3.25

Old Rags

No. 1 White Linens. 7.50 @ 8.50
No. 2 White Linens. 6.50 @ 7.50
No. 3 White Linens. 4.50 @ —

HIGHEST QUALITY CLAYS

LUMP and POWDERED } IMPORTED — PAPER MAKERS IMPORTING CO. INC. EASTON, PENNSYLVANIA U.S.A. — DOMESTIC { CRUDE CRUSHED, AIR FLOATED, WATER WASHED

PRECIPITATED CALCIUM CARBONATE

Mill Cogs

ON SHORTEST POSSIBLE NOTICE

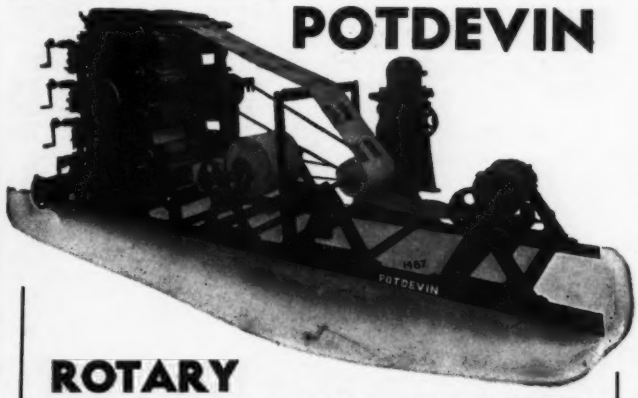
We make all kinds of Mill Cogs and have special facilities that will be of great service to you. We make a specialty of "ready dressed" cogs which are

READY TO RUN

the moment driven and keyed. Write at once for circular "G" and instruction sheets free.

THE N. P. BOWSHER CO.
South Bend, Ind.
Established 1882

POTDEVIN



ROTARY WEB PRINTING PRESSES

BUYERS PREFER POTDEVIN presses because they are high production, multi-color up to 8 colors, multi-size and extremely versatile and economical.

PRESSMEN PREFER POTDEVIN presses because they are able to obtain the quality work for which they are held responsible.

CUSTOMERS PREFER POTDEVIN printed papers because the printing is noticeably superior . . . because a POTDEVIN printed container stands out against all others.

The name POTDEVIN stands for quality and dependability in printing presses just as it does in bag machines, waxing machines and other converting units.

ANILINE — OIL — ROTOGRAVURE
up to 80" widths

POTDEVIN MACHINE CO.
1223 38th Street Brooklyn, New York

WATERBURY FELTS

Are Made By

H. WATERBURY & SONS CO.

ORISKANY, NEW YORK

SCREENS of Perforated Metal

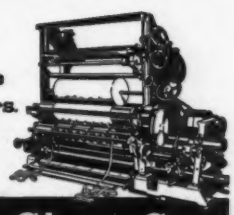
The Harrington & King PERFORATING Co.

5652 Fillmore St., Chicago, Ill. 114 Liberty St., New York, N.Y.

LANGSTON SLITTERS AND ROLL WINDERS

There is a type and size for every job—from tissue to heavy board—narrow to wide cuts—small to large diameters.

SAMUEL M. LANGSTON COMPANY, *Camden, N. J.*



—a Shear Cut—a Clean Cut.

No. 4 White Linens.	2.25	@	3.25
No. 1 White Cotton.	4.25	@	4.75
No. 2 White Cotton.	3.25	@	3.75
No. 3 White Cotton.	2.50	@	3.00
No. 4 White Cotton.	1.90	@	2.20
Extra Light Prints..	2.00	@	2.40
Ord. Light Prints...	1.75	@	2.15
Med. Light Prints...	1.55	@	1.95
Dutch Blue Cottons.	2.25	@	2.50
French Blue Linens..	3.00	@	—
Checks and Blues...	2.00	@	—
Linsey Garments....	1.90	@	2.00
Dark Cottons.....	1.50	@	1.60
Old Shopperies....	1.30	@	1.45
New Shopperies.....	1.45	@	1.50
French Blues.....	2.25	@	2.50

Old Rope and Bagging

(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—			
Foreign	1.60	@	1.75
Domestic	1.50	@	1.60
Wool Tares, light...	1.60	@	1.70
Wool Tares, heavy..	1.80	@	1.90
Bright Bagging.....	1.50	@	1.60
Manila Rope—			
Foreign	2.60	@	2.75
Domestic	2.75	@	3.00
Jute Threads.....	3.00	@	3.25
Sisal Strings	1.50	@	1.60
Mixed Strings....	.55	@	.60

Old Waste Papers

(F. o. b. New York)

Shavings—			
White Envelope Cuttings	2.30	@	2.40
Ordinary Hard White No. 1....	1.90	@	2.00
Soft White No. 1..	1.60	@	1.75
Soft White Extra..	2.25	@	2.40
Flat Stock—			
Stitchless	.80	@	.85
Overissue Mag	.70	@	.75
Solid Flat Book...	.60	@	.65
Crumbled No. 1...	.40	@	.45
Ledger Stock White.	1.05	@	1.15
Ledger Stock Colored	.60	@	.70
Manila—			
New Env. Cut....	1.40	@	1.50
New Cuttings.....	1.00	@	1.20
Old Kraft Machine—			
Compressed bales..	.60	@	.65
News—			
No. 1 White News	1.25	@	1.30
Strictly Overissue.	.40	@	.45
Strictly Folded....	.37½	@	.40
Corrugated	.45	@	.47½
No. 1 Mixed Paper..	.22½	@	.27½

Twines

(F. o. b. Mill)
(Soft Fiber)

Coarse Polished—			
India	.12¾	@	.14¾
White Hemp.....	.13¾	@	.15¾
Fine Polished—			
Fine India.....	.16	@	.18
Unpolished—			
Box	.09½	@	—
Paper Makers.....	.09½	@	.10½
Tube Rope.....	.10¾	@	.12½
Wall Paper.....	.10¾	@	.12½
Wrapping	.12	@	—
Soft Fiber Rope...	.12	@	.14
Cotton	.16	@	.19
(Hard Fiber)			
Medium Java.....	.11	lb	.17
Mex. Sisal.....	.10	@	.16
Manila	.16	@	.23

Domestic	2.65	@	2.75
Sisal Rope	1.75	@	1.85
Mixed Rope.....	.45	@	.50
Transmission Rope..	1.80	@	1.90
Soft Jute Rope	2.00	@	2.25
Jute Carpet Threads.	.75	@	.90
Gunny Bagging—			
Foreign	1.50	@	1.65
Domestic	1.35	@	1.40
Bleachery Burlap....	2.50	@	2.70
Scrap Burlap—			
Foreign	1.35	@	1.40
Domestic	1.35	@	1.40
Scrap Sisal.....	1.55	@	1.60
Scrap Sisal for Shredding	1.75	@	1.80
Wool Tares, Heavy..	1.40	@	1.50
New Burlap Cuttings	2.00	@	2.25
Aust. Wool Pouches.	2.00	@	2.10
Heavy Baling Bagging	1.50	@	1.60
Paper Mill Bagging..	.85	@	1.00
No. 2 Bagging.....	.45	@	.50

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints...	.03¼	@	.03½
New White No. 1....	.0675	@	.0690
New Light Flannelettes	.05	@	—
Silesias No. 1.....	.04	@	.04¼
New Black Silesias..	.03½	@	.03¾
Soft Unbleached.....	6.50	@	7.00
Blue Cheviots.....	.05	@	.05¼
Fancy	.02	@	.02½
Washable	.02	@	.02½
Cottons—According to grades—			
Blue Overalls.....	.04¾	@	.05

New Black, soft...	.03¾	@	.04
Khaki Cuttings.....	.02½	@	.03
O. D. Khaki.....	.03	@	.03¾
Corduroy	.02¾	@	.03
New Canvas.....	.06¾	@	.07¼
B. V. D. Cuttings...	.06¾	@	.07

Domestic Rags (Old)

(F. o. b. Boston)

Canvas	.04¼	@	—
White No. 1—			
Repacked	—	@	2.75
Miscellaneous	2.50	@	2.75
White No. 2—			
Repacked	1.90	@	2.00
Miscellaneous	2.00	@	2.25
Twos and Blues.....	1.75	@	2.00
Old Blue Overalls...	1.50	@	—
Thirds and Blues—			
Repacked	1.37½	@	1.75
Miscellaneous	1.25	@	1.62¼
Black Stockings.....	3.90	@	4.00
Roofing Stock—			
No. 1.....	1.00	@	1.10
No. 2.....	.65	@	.70
No. 3.....	.45	@	.50

Foreign Rags

(F. o. b. Boston)

Dark Cottons.....	.90	@	1.00
Dutch Blues.....	2.65	@	2.75
New Checks and Blues	2.85	@	3.00
Old Fustians.....	2.25	@	2.50
Old Linsey Garments.	2.10	@	2.25
New Silesias.....	3.75	@	4.00

PHILADELPHIA

Domestic Rags (New)

(Price to Mill, f. o. b. Phil.)

Shirt Cuttings—			
New White, No. 1.	.06	@	.06½
New White, No. 2.	.03½	@	.04
Light Silesias.....	.03½	@	.04
Silesias, No. 1....	—	@	.04½
Black Silesias, soft	—	@	.03
New Unbleached..	.05½	@	.06
Washable, No. 1..	.01½	@	.01¾
Blue Overall.....	.04	@	.04½
Cottons—According to grades—			
Washable No. 2...	.01	@	.01¼
New Blue.....	.01	@	.01¼
Fancy Percales...	—	@	.02½
New Black Soft...	.03	@	.03½
New Light Seconds	—	@	.04½
New Dark Seconds	.50	@	.75
Khaki Cuttings—			
No. 1 O. D.....	.03	@	.03½
No. 2 Mixed.....	.02	@	.02½
Corduroy	—	@	.02
New Canvas.....	.05	@	.05½
New Black Mixed.	.02½	@	.02¾

Domestic Rags (Old)

White No. 1—			
Repacked	2.75	@	3.00
Miscellaneous	2.00	@	2.25
Thirds and Blues—			
Miscellaneous	1.00	@	1.25
Repacked	1.50	@	1.75
Black Stockings (Export)	3.00	@	3.50
Roofing Stock—			
Foreign No. 1.....	.90	@	1.10
Domestic No. 1...	.80	@	.90
Domestic No. 2...	.60	@	.65
Roofing Bagging...	.40	@	.45

Bagging

(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	—	@	1.50
Domestic	1.50	@	1.60
Manila Rope.....	—	@	3.00
Sisal Rope.....	1.50	@	1.75
Mixed Rope.....	.75	@	1.00
Scrap—			
No. 1.....	—	@	1.50
No. 2.....	.80	@	.90
Wool Tares, heavy..	3.25	@	3.50
Mixed Strings.....	.45	@	.50
No. 1 New Light Burlap	2.50	@	3.00
New Burlap Cuttings	1.75	@	2.00

Old Papers

(F. o. b. Phila.)

Shavings—			
No. 2 Hard White	2.25	@	2.30
No. 2 Hard White	1.90	@	2.00
No. 1 Soft White.	1.75	@	1.80
No. 2 Soft White.	1.30	@	1.40
No. 1 Mixed.....	.65	@	.75
Solid Ledger Stock..	1.45	@	1.50
Ledger Stock, white.	1.10	@	1.15
Ledger Stock, colored	.75	@	.80
No. 1 Books, heavy..	.60	@	.65
Manila Cuttings....	1.45	@	1.50
Print Manila.....	.45	@	.50
Container Manila...	.35	@	.40
Kraft Paper.....	.65	@	.70
No. 1 Mixed Paper..	.25	@	.30
Straw Board Chip...	.25	@	.30
Binders Board Chip.	.25	@	.30
Corrugated Board...	.50	@	.55
Overissue News.....	.45	@	.50
Old Newspapers.....	.35	@	.40

BOSTON

Old Papers

(F. o. b. Boston)

Shavings—			
No. 1 Hard White	2.25	@	2.50
No. 1 Soft White.	1.85	@	2.15
No. 2 Mixed.....	.75	@	.80
Solid Ledger Books..	1.30	@	—
Overissue Ledger Stock	1.30	@	1.50
Mixed Ledgers.....	.85	@	.90
No. 1 Books, heavy..	.70	@	—
No. 1 Books, light..	.65	@	.75
Crumpled Stitchless Book Stock.....	.55	@	.65
Manila Env. Cuttings	1.70	@	1.85
Manila Envelope Cuttings, Extra Quality	2.00	@	2.10
No. 1 Old Manila...	.65	@	.70
White Blank News..	1.30	@	1.40
No. 1 Kraft.....	.70	@	.75
Mixed Papers.....	.22½	@	.25
Print Manila	.45	@	.55
Container Manila....	.32½	@	.35
Old Newspapers.....	.32½	@	.35
Paper Wool Strings..	.60	@	.65
Overissue News.....	.45	@	.50
Box Board Chips....	.25	@	.30
Corrugated Boxes...	.32½	@	.35
Kraft corrugated boxes	.65	@	.75
Screening Wrappers.	.40	@	.45

Bagging

(F. o. b. Boston)

Manila Rope—			
Foreign	2.50	@	2.65

CHICAGO

Old Papers

(F. o. b. Chicago)

Shavings—			
No. 1 White Envelope Cuttings....	1.80	@	1.90
No. 1 Hard White.	1.70	@	1.80
No. 1 Soft White..	1.50	@	—
Ledger & Writings..	.75	@	.80
Solid Books.....	.45	@	.50
Blanks	.90	@	—
Krafts	.45	@	.50
New Kraft Cuts.....	1.10	@	—
Manila Env. Cuts...	Nominal		
Ex. No. 1 Manila...	Nominal		
Print Manila	Nominal		
Overissue News.....	.35	@	—
Old Newspapers—			
No. 1 Folded News	.25	@	.30
No. 1 Mixed Paper	.15	@	.20
Roofing Stocks—			
No. 1.....	1.00	@	1.05
No. 2.....	.85	@	—

TORONTO

Paper

Bonds

Direct mill shipment in two-ton lots

No. 1 White	$35.50	@	—
No. 1 Tints	36.50	@	—
No. 2 White	25.50	@	—
No. 2 Tints	26.50	@	—
No. 2 Golden Rod..	27.50	@	—
No. 3 White	21.00	@	—
No. 4 White	18.00	@	—
No. 4 Tints	16.00	@	—
No. 4 Golden Rod...	17.00	@	—
Direct mill shipment in three-ton lots			
No. 5 White	$10.50	@	—
No. 5 Tints	11.50	@	—
No. 5 Golden Rod..	12.00	@	—
No. 6 White	9.00	@	—
No. 6 Tints	9.50	@	—
No. 6 Golden Rod..	11.00	@	—
No. 7 White	8.00	@	—
No. 7 Tints	8.50	@	—
No. 7 Golden Rod..	10.00	@	—
Book—			
No. 1 M. F.	$7.00	@	—
No. 2 M. F.	6.50	@	—
No. 3 M. F.	5.35	@	—
No. 1 S. C.	7.25	@	—
No. 2 S. C.	6.75	@	—
No. 3 S. C.	5.85	@	—

Coated Book & Litho

Ton Lots (resale)

No. 1	$12.00	@	—
No. 2	10.25	@	—
No. 3	8.90	@	—
Coated tinted	13.00	@	—
Wrapping—delivered—			
Rag Brown.....	4.85	@	5.25
White Wrap.....	4.00	@	—
"B" Manila.....	4.90	@	6.15
No. 1 Manila.....	5.50	@	6.90
Fiber	5.50	@	6.90
Kraft No. 2.....	5.50	@	6.90

(F. o. b. Cars, Toronto)

News per ton—			
Rolls (contract)..)	46.00	@	—
Sheets	54.00	@	—

Pulp

Ground wood.....	$29.00	@	—
Unbleached sulphite.	44.00	@	—
Bleached sulphite...	54.00	@	—
Kraft	50.00	@	—
Soda	54.00	@	—

Old Waste Paper

(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut...	2.00	@	—
Soft White.....	1.75	@	—
White Blk. News..	1.25	@	1.10
Book and Ledger—			
Flat Magazine and Book Stock (old)	.70	@	—
Light and Crumpled Book Stock.	.60	@	—
Ledgers and Writings	1.00	@	—
Manilas—			
New Manila Cut...	1.35	@	—
Printed Manilas...	.45	@	—
Kraft	.95	@	—
News and Scrap—			
Strictly Overissue..	.50	@	—
Strictly Folded....	.45	@	—
No. 1 Mixed Paper..	.30	@	—

Domestic Rags

(Price to Mills, f.o.b. Toronto)

No. 1 White Shirt Cuttings	.06½	@	.06¾
Light Prints.....	.03	@	.03¼